Vol. 914 Number 3

OFFICIAL GAZETTE

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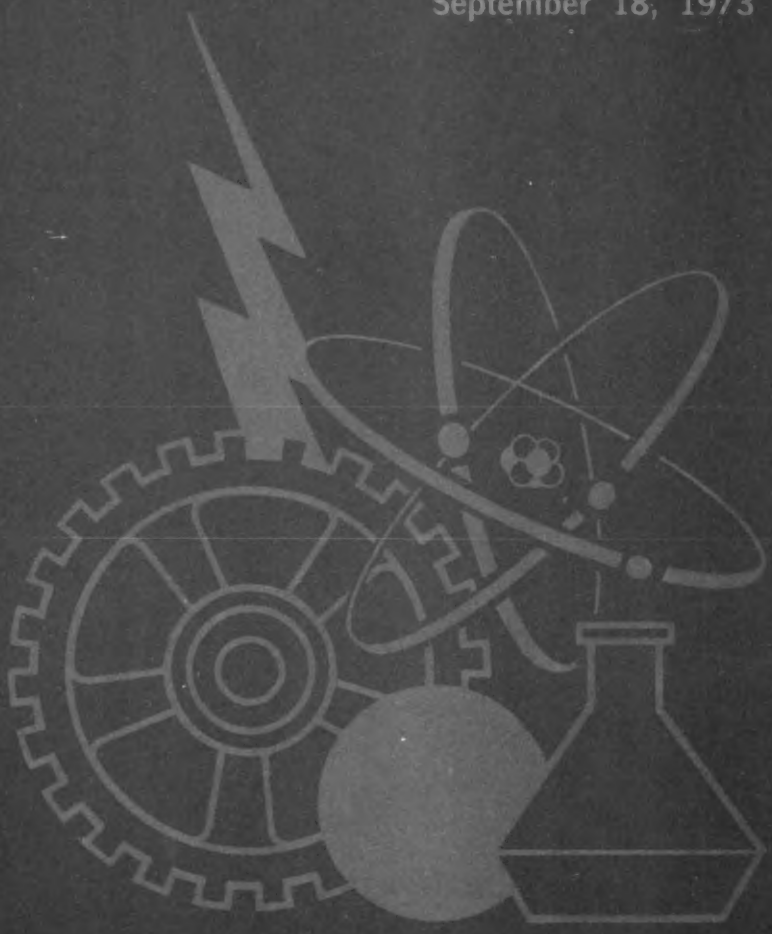
PATENTS

September 18, 1973



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 18, 1973 Volume 914 Number 3

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before October 5, 1973:

Bercovitz, Leon J., 10036 Renfrew Road, Silver Spring, Md. 20901

Chirlin, Sydney R., 1 Amstel Drive, #15, New Castle, Del. 19720

Epstein, Reuben, 2800 Quebec St. NW., Washington, D.C. 20008

Harris, Michael D., 1888 Century Park E., Suite 1000, Los Angeles, Calif. 90067

Mintz, Herbert H., 17 Fence Line Drive, Gaithersburg, Md. 20760

Rutledge, Carl A., 2250 N. Beauregard St., Alexandria, Va. 22311

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,035,294, Stout and Houser, SWEEPER WITH HAND ACTUATED REAR DUMPING DEBRIS RECEPTACLE; **D. 194,051,** same, LAWN SWEEPER, **filed** Feb. 27, 1973, C.A., Sixth Circuit, Ohio (Cincinnati), Doc. 72–1664, *Parker Sweeper Company* v. *The E. T. Rugg Company.* Decision: The judgment of the District Court is reversed and the case is remanded for entry of an order dismissing the complaint on the ground that both patents at issue are invalid.

3,046,110, M. P. Schmidt, PROCESS OF MAKING PRINTING PLATES AND LIGHT SENSITIVE MATERIAL SUITABLE FOR USE THEREIN, **filed** Jan. 25, 1971, D.C. Del. (Wilmington), Doc. 4049, transferred from D.C. Md., Doc. 19764–C, *Azoplate Corporation* v. *James E. Harper.* Order returning case to the United States District Court for the District of Maryland, Nov. 10, 1972.

3,057,195, Bentley and Price, FORCE MEASURING SYSTEM; **3,074,279,** H. D. Morris, POSITION DETECTING TRANSDUCER; **Re. 27,411,** same, FORCE MEASURING SYSTEM, **filed** Oct. 2, 1972, D.C.N.J. (Trenton), Doc. 1626–72, *Systron-Donner Corporation* v. *Gulton Industries, Inc.* Consent order dismissing action, Mar. 7, 1973.

3,074,279. (See 3,057,195.)

3,095,342, J. Kraly, TIRE REPAIR INSERT, **filed** May 22, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1247, *Mary S. Kraly* v. *National Distillers and Chemical Corp.* Judgment entered, ordered, adjudged and decreed that claims 3–6 of the Kraly Patent No. 3,095,342 are invalid pursuant to 35 U.S.C. 103, such invalidity terminating all defendant's further obligations under said contract, Feb. 28, 1973.

3,098,520, Greenstadt and Ziers, DRAPERY APPARATUS, **filed** Mar. 2, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–454–CC, *Lightron Corp.* v. *Fabcraft Inc.*

3,100,986, Starr, Kaplan, Greenberg and Cox, LEAKAGE INDICATOR; **3,357,161,** Starr, Kaplan and Cox, LIQUID PURIFYING SYSTEM, **filed** Feb. 21, 1973, D.C., E.D. Mich. (Detroit), Doc. 39687, *Louis Starr and Allan L. Kaplan* v. *The Allen Group Inc.*

3,167,814, H. O. Corbert, APPARATUS FOR FORMING BLOWN TUBULAR FILMS, **filed** May 10, 1972, D.C. Mass. (Boston), Doc. 72–1542–M, *Gloucester Engineering Co., Inc.* v. *National Distillers and Chemical Corporation.*

3,257,190, Q. F. Soper, METHOD OF ELIMINATING WEED GRASSES AND BROADLEAF WEEDS. **filed** Aug. 24, 1972, D.C., N.C. Ill. (Chicago), Doc. 72c2111, *Eli Lilly and Company* v. *United States Borax & Chemical Corp.*

3,265,546, R. J. Medford, CHEMICAL DRILLING OF CIRCUIT BOARDS, **filed** Feb. 3, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–411–CC, *Chem-Aero, Inc.* v. *Chemical Machining Corp. et al.*

3,273,433, A. Borzym, TUBULAR STOCK CUTOFF METHOD AND APPARATUS, **filed** Mar. 5, 1973, D.C., E.D. Mich. (Detroit), Doc. 39750, *Warren Machine & Engineering, Inc.* v. *W. H. Morrin.*

3,357,161. (See 3,100,986.)

3,418,111, R. B. Herchenroeder, COBALT BASE ALLOY, **filed** Feb. 16, 1973, D.C., W.D. Pa. (Pittsburgh), Doc. 73–146, *Cyclops Corporation* v. *Cabot Corporation.*

3,474,479, H. J. Girard, PIPELINE CLEANING DEVICE, **filed** Feb. 28, 1973, D.C., S.D. Tex. (Houston), Doc. 73–H–272, *Harry J. Girard* v. *Polly-Pig by Knapp, Inc.*

3,477,406, M. Fujinaga, METHOD OF CULTIVATION OF PENAEID SHRIMP, **filed** Jan. 5, 1972, D.C. Del. (Wilmington), Doc. 4306, *United States of America* v. *Marifarms, Inc. and Motosaku Fujinaga, also known as Gensaku Hudinaga.* Decision: It appearing that Marifarms, Incorporated has caused the reissue application of the patent in suit to be abandoned and has dedicated to the public for the full term thereof the patent in suit; it further appearing that there remain no other issues to be litigated; and further appearing that the individual defendant has neither been served nor appeared in the action; pursuant to Civil Rule 41(a)(1) the action is hereby dismissed, Dec. 26, 1972.

3,483,934, B. H. Fuchs, UNDERREAMER HAVING UNEQUAL ARM EXTENSION RADII, **filed** Oct. 30, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2570–JWC, *Grant Oil Tool Company, Inc.* v. *Benjamin H. Fuchs and Petroleum Drilling Tools.* Consent judgment and order thereon enjoining defendants from infringing plaintiff's patent without the consent of plaintiff. The plaintiff's 2nd cause of action for unfair competition is dismissed without prejudice, Feb. 26, 1973.

3,548,066, A. B. Freeman, PLURAL MODE AUTOMATIC BASS NOTE SYSTEM FOR MUSICAL CHORDS WITH AUTOMATIC RHYTHM DEVICE, **filed** Nov. 16, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2758, *Alfred B. Freeman* v. *Hammond Corporation.*

3,594,964, W. T. Clark, PLANETARIUM PROJECTION DOME, **filed** Apr. 5, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72–679, *Observa-Dome Laboratories, Inc.* v. *McGraw-Hill, Inc.* Defendants' motion for summary judgment is unopposed, and further appearing that there has been no action of either defendant which even arguably infringes the patent in suit, defendant's motion for summary judgment is hereby granted, Feb. 21, 1973.

3,597,187, U. P. Trudeau, APPARATUS FOR HANDLING MOLD CHARGES OF MOLTEN GLASS, **filed** Mar. 5, 1973, D.C. Conn. (New Haven), Doc. 15662, *Owens-Illinois, Inc.* v. *Emhart Corporation.*

Re. 27,411. (See 3,057,195.)

D. 194,051. (See 3,035,294.)

D. 222,104, K. G. Logan, VEHICLE SAFETY LIGHT AND BRACKET THEREFOR, **filed** Feb. 21, 1973, D.C., N.D. Iowa (Fort Dodge), Doc. 73–C–2014–C, *Saflite Corp.* v. *Cushion Industries Co.* (*a partnership comprised of Venonn Ferguson and Clarice Ferguson, and Gwenna Groff*).

Certificates of Correction for the Week of Sept. 18, 1973

Re. 27,584	3,720,069	3,728,348	3,731,976
3,554,684	3,720,307	3,728,879	3,732,055
3,554,790	3,720,889	3,728,906	3,732,153
3,573,239	3,721,041	3,728,989	3,732,156
3,576,487	3,721,435	3,728,991	3,732,157
3,587,164	3,721,523	3,729,077	3,732,326
3,601,587	3,721,633	3,729,087	3,732,330
3,609,876	3,722,145	3,729,111	3,732,443
3,662,534	3,722,268	3,729,181	3,732,616
3,668,672	3,722,372	3,729,183	3,732,659
3,671,527	3,722,586	3,729,270	3,732,695
3,682,100	3,722,612	3,729,415	3,733,094
3,686,160	3,722,955	3,729,470	3,733,123
3,688,876	3,723,312	3,729,579	3,733,209
3,690,864	3,723,024	3,729,580	3,733,275
3,692,754	3,723,248	3,729,642	3,733,349
3,695,501	3,723,463	3,729,662	3,733,521
3,695,274	3,723,542	3,729,678	3,733,554
3,704,565	3,723,989	3,729,682	3,733,601
3,706,485	3,724,061	3,729,692	3,733,863
3,709,559	3,724,789	3,729,995	3,733,881
3,709,767	3,724,803	3,730,016	3,734,123
3,710,074	3,725,069	3,730,186	3,734,222
3,711,316	3,725,097	3,730,221	3,734,539
3,711,376	3,725,330	3,730,344	3,734,609
3,711,467	3,725,392	3,730,355	3,734,649
3,711,928	3,725,480	3,730,378	3,734,763
3,713,368	3,725,793	3,730,510	3,734,798
3,714,772	3,725,845	3,730,593	3,734,881
3,715,948	3,725,864	3,730,630	3,734,956
3,716,008	3,726,174	3,730,680	3,734,981
3,716,251	3,726,183	3,730,693	3,735,038
3,716,535	3,726,285	3,730,694	3,735,153
3,716,546	3,726,367	3,730,764	3,735,269
3,716,663	3,726,674	3,730,869	3,735,478
3,716,995	3,726,723	3,730,892	3,735,493
3,718,075	3,726,897	3,730,894	3,735,647
3,718,587	3,727,102	3,730,939	3,735,663
3,718,626	3,727,169	3,731,389	3,735,798
3,718,675	3,727,383	3,731,454	3,735,883
3,718,712	3,728,111	3,731,651	3,736,546
3,718,823	3,728,140	3,731,670	3,737,179
3,719,302	3,728,307	3,731,681	3,740,289
3,719,624	3,728,346	3,731,937	3,740,664
3,720,066			

Disclaimer and Dedication

3,728,112.—*Leo N. Chapin,* Des Plaines, and *Robert Freed,* Lincolnwood, Ill. ELECTROPHOTOGRAPHIC MULTICOLOR COPY PROCESS EMPLOYING SOLUBILIZABLE DYES. Patent dated Apr. 17, 1973. Disclaimer and Dedication filed Nov. 3, 1972, by the assignee, *A. B. Dick Company.*

Hereby disclaims and dedicates to the Public the portion of the term of the patent subsequent to Dec. 28, 1988.

Service by Publication

Francis R. Sullivan

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on May 3, 1971, of an application for patent entitled "Thermally Stable Polyphosphonates as Flame Retardants," on behalf of Francis R. Sullivan, whose last known address is 201 12th Avenue, Belmar, New Jersey 07719. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor James L. Clovis without execution by the said Francis R. Sullivan. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Francis R. Sullivan in connection with the said applciation must be taken within thirty days of the publication of this notice.

WILLIAM FELDMAN,
Acting Assistant Commissioner of Patents.

Disclaimers

3,620,518.—*Karl-Heinz Winter,* Dornigheim and *Ottwin Krach,* Wolfgang Bei Hanau/Main, Germany. PROCESS AND DEVICE FOR THE TREATMENT OF SURFACES OF WORKPIECES IN AN ANNEALING FURNACE. Patent dated Nov. 16, 1971. Disclaimer filed June 10, 1971, by the assignee, *Deutsche Gold- und Silber-Scheideanstalt vormals Roessler.*

Hereby disclaims the portion of the term of the patent subsequent to July 7, 1987.

3,620,757.—*Rudolph H. Ellinger,* New Canaan, Conn. and *Mark G. Schwartz,* Yonkers, N.Y. REPLACEMENT OF SODIUM CASEINATE. Patent dated Nov. 16, 1971. Disclaimer filed Nov. 3, 1971, by the assignee, *Stauffer Chemical Company.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 26, 1988.

3,632,853.—*Eugene E. Galantay,* Morristown, N.J. CERTAIN BENZOCYCLOHEPTOXAZOLE COMPOUNDS. Patent dated Jan. 4, 1972. Disclaimer filed Apr. 15, 1971, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 22, 1987.

3,636,603.—*Theron V. Moss,* Shaker Heights, Ohio and *Ollie Ray Caylor,* McDonald, Tenn. BUFFING DEVICE. Patent dated Jan. 25, 1972. Disclaimer filed May 12, 1971, by the assignee, *Theron V. Moss.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 6, 1987.

3,636,757.—*Leo J. Hansen,* Clarendon Hills, Ill. MEASURING THE TENDERNESS OF MEAT. Patent dated Jan. 25, 1972. Disclaimer filed Sept. 7, 1971, by the assignee, *Armour and Company.*

Hereby disclaims the portion of the term of the patent subsequent to July 13, 1987.

3,639,757.—*David I. Carroll,* Lantana, *Roger F. Wernlund,* Lake Worth, and *Martin J. Cohen,* West Palm Beach, Fla. APPARATUS AND METHODS EMPLOYING ION-MOLECULE REACTIONS IN BATCH ANALYSIS OF VOLATILE MATERIALS. Patent dated Feb. 1, 1972. Disclaimer filed Nov. 1, 1971, by the assignee, *Franklin GNO Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 16, 1988.

3,648,711.—*Richard M. Berger,* Richmond and *Elwin W. Brooks,* Mechanicsville, Va. TOBACCO SMOKE FILTER. Patent dated Mar. 14, 1972. Disclaimer filed Nov. 16, 1971, by the assignee, *American Filtrona Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 13, 1987.

3,655,136.—*William L. Livingston,* Sharon, Mass. PRESSURE RESPONSIVE FLUID NOZZLE. Patent dated Apr. 11, 1972. Disclaimer filed April 25, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 4, 1989.

3,665,306.—*Peter Orth,* Lippstadt, Germany. PROCESS FOR MEASURING REVOLUTION SPEED OF A BODY. Patent dated May 23, 1972. Disclaimer filed Sept. 20, 1972, by the assignee, *Heberlein Patent Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to May 23, 1989.

3,681,388.—*Marcel K. Eberle,* Madison, N.J. N-SUBSTITUTED-3-AMINOALKANOYL FUSED CYCLOALKYL INDOLES. Patent dated Aug. 1, 1972. Disclaimer filed July 17, 1972, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to May 16, 1989.

3,696,100.—*Guy M. Raynaud, Claude P. Fauran, Michel J. Turin,* Paris, *Bernard M. Pourrias,* Meudon La Foret and *Gerard J. Huguet,* Malesherbes, France. N-(6-METHYL-6-OL-2-HEPTYL)-N'-SUBSTITUTED PIPERAZINES. Patent dated Oct. 3, 1972. Disclaimer filed Nov. 8, 1971, by the assignee, *Delalande S.A.*

Hereby disclaims the portion of the term of the patent subsequent to Mar. 30, 1988.

3,697,640.—*Peter M. Grant,* Kingsport, Tenn. and *Brazelton Fulkerson* and *John W. Mench,* Rochester, N.Y. RUMEN STABLE MEDICAMENT AND/OR NUTRIENT COMPOSITIONS. Patent dated Oct. 10, 1972. Disclaimer filed Mar. 13, 1972, by the assignee, *Eastman Kodak Company.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 9, 1988.

3,702,919.—*Robert R. Candor,* Miami Township, and *James T. Candor,* Washington Township, Ohio. METHOD FOR CLEANING A COOKING APPARATUS USING ELECTROSTATIC MEANS. Patent dated Nov. 14, 1972. Disclaimer filed Apr. 24, 1972, by the inventors.

Hereby disclaim the portion of the term of the patent subsequent to June 23, 1987.

3,707,372.—*Robert W. Hallman,* Utica, and *Gary W. Kurtz,* Southfield, Mich. ELECTROMAGNETIC RADIATION SENSITIVE ELEMENTS. Patent dated Dec. 26, 1972. Disclaimer filed Oct. 24, 1972, by the assignee, *Teeg Research, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1989.

3,708,015.—*Cheng Yao,* Weston, Mass. SYSTEM FOR FIRE PROTECTION USING RECIRCULATION OF COMBUSTION PRODUCTS. Patent dated Jan. 2, 1973. Disclaimer filed Sept. 28, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patnet subsequent to Sept. 19, 1989.

3,711,470.—*Karl-Heinz Weber,* Gau-Algesheim, *Karl Seile* and *Peter Danneberg,* Ingelheim (Rhine), *Rolf Giesemann,* Bingen, and *Karl Heinz Hauptmann,* deceased, late of Ingelheim (Rhine), Germany, by *Maria Hauptmann,* heir, Bonn (Rhine), Germany. 5-PHENYL-7-BROMO-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONES. Patent dated Jan. 16, 1973. Disclaimer filed Sept. 13, 1972, by the assignee, *Boehringer Ingelheim G.m.b.H.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 14, 1989.

3,711,521.—*Robert V. Coombs,* Summit, and *Eugene E. Galantay,* Morristown, N.J. 17α-HYDROXY AND ACYLOXY SUBSTITUTED-9α-METHYL-19-NORPROGESTERONES. Patent dated Jan. 16, 1973. Disclaimer filed Dec. 4, 1972, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 11, 1989.

3,713,435.—*Roman Szpur,* Dayton, Ohio. PICKUP ELECTRODE WITH RIGID ELECTROLYTE CUP. Patent dated Jan. 30, 1973. Disclaimer filed Nov. 13, 1972, by the assignee, *NDM Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 10, 1989.

3,717,637.—*Fritz Hunziker,* Bern, *Jean Schmutz,* Muri near Bern, *Franz Martin Kunzle,* Bern, Switzerland. TRIFLUOROMETHYL THIO SUBSTITUTED DIBENZ [b, f] [1, 4] OXAZEPINES. Patent dated Feb. 20, 1973. Disclaimer filed July 24, 1972, by the assignee, *Sandoz-Wander, Inc.*

Hereby enters this disclaimer to claims 1 to 4 of said patent.

3,717,663.—*Robert V. Coombs,* Chatham and *Eugene E. Galantay,* Morristown, N.J. 9-ALPHA-METHYL STEROIDS. Patent dated Feb. 20, 1973. Disclaimer filed Dec. 4, 1972, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to April 11, 1989.

3,717,847.—*Kazuhiko Kakuta,* Tokyo, Japan. METHOD AND APPARATUS FOR TRACING THE CONTOUR OF A PATTERN. Patent dated Feb. 20, 1973. Disclaimer filed Nov. 20, 1972, by the assignee, *Iwatsu Electric Company, Ltd.*

Hereby disclaims the portion of the term of the patent subsequent to June 20, 1989.

3,722,596.—*William L. Livingston,* Sharon, Mass. FIRE PROTECTION SYSTEM. Patent dated Mar. 27, 1973. Disclaimer filed Dec. 21, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 4, 1989.

3,729,312.—*Raymond H. Young, Jr.,* Macon, Ga. ELECTROPHOTOGRAPHIC COMPOSITION EMPLOYING POLY-(VINYL-HALOBENZAL) BINDER FOR ORGANIC PHOTOCONDUCTORS. Patent dated Apr. 24, 1973. Disclaimer filed Sept. 8, 1972, by the assignee, *Monsanto Company.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 22, 1989.

3,732,581.—*Joseph J. Pitti,* Wantagh and *George A. Tassone,* Brooklyn, N.Y. POOL COVER. Patent dated May 15, 1973. Disclaimer filed Nov. 3, 1972, by the assignee, *Atreo Manufacturing Co., Inc.*

Hereby disclaims the portion of the term of the patent subsequent to June 6, 1989.

3,734,979.—*Joseph Victor Koleske* and *Earl Richard Walter,* Charleston, W. Va. SHAPED AND MOLDED ARTICLES OF POLYMER BLENDS COMPRISING POLYOLEFINS AND LACTONE POLYMER. Patent dated May 22, 1973. Disclaimer filed Nov. 20, 1972, by the assignee, *Union Carbide Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 4, 1989.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 1, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-20-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-01-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-01-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-19-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-24-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-15-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-27-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	1-03-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-29-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-01-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-24-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-25-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-05-72

Expiration of patents: The patents within the range of numbers indicated below expire during September 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,761,142 to 2,764,787, inclusive
Plant Patents ..... Numbers 1,509 to 1,521, inclusive

REISSUES

SEPTEMBER 18, 1973

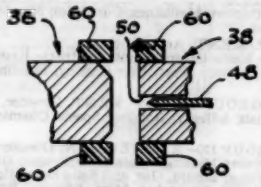
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,759

METHOD AND APPARATUS FOR SEALING FILM WITH HIGH FREQUENCY ELECTRICAL ENERGY USING A TAPERED EDGE SEALING JAW

John Leimert, Highland Park, Ill.
(373 E. Wisconsin Ave., Lake Forest, Ill. 60045)

Original No. 3,530,642, dated Sept. 29, 1970, Ser. No. 729,315, May 15, 1968, which is a continuation of Ser. No. 615,171, Feb. 10, 1967, now abandoned. Application for reissue Dec. 14, 1971, Ser. No. 208,007
Int. Cl. B23k *13/02*; B29c *19/04*
U.S. Cl. 156—273 6 Claims



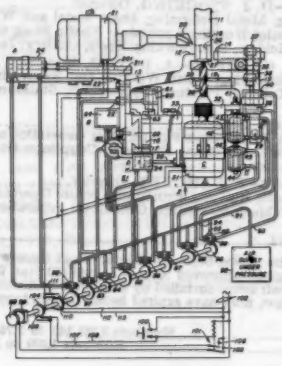
An apparatus for sealing plastic film into an enclosed form with high frequency electrical energy, the film first being formed into a closed shape and continuously sealed in this shape, said apparatus contemplating the sealing of film such as polyvinyl chloride rapidly and without interruption in the seal.

27,760

DOOR FINISHING MACHINE

George L. Mayo, Fort Worth, Tex., by Clary Corp., San Gabriel, Calif., assignee

Original No. 3,513,889, dated May 26, 1970, Ser. No. 741,746, July 1, 1968. Application for reissue Aug. 3, 1970, Ser. No. 60,478
Int. Cl. B27m *3/00*
U.S. Cl. 144—3 R 16 Claims



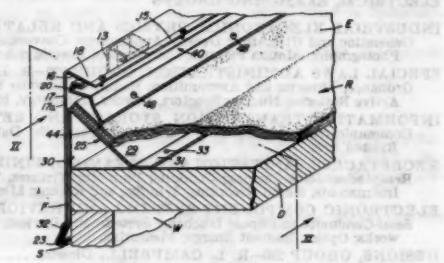
A machine for drilling and routing a door to receive a door lock in which a rotating cutting tool having a drilling portion and a routing tip is first caused to enter the door by an amount equal to the depth of the lock face recess, whereupon the tool is moved laterally in coordinate directions to form the recess. Thereafter, the tool is centered and advanced, causing the drill portion thereof to drill the lock bolt hole. Pneumatically operable devices operate in timed sequence to clamp the door in position and to operate the cutting tool in various directions.

27,761

CONJOINT FACIA AND WATER DAM

Julian J. Attaway, Tucker, Ga., assignor to Miscellaneous Manufacturing Corporation, Tucker, Ga.

Original No. 3,624,973, dated Dec. 7, 1971, Ser. No. 1,123, Jan. 7, 1970. Application for reissue Oct. 5, 1972, Ser. No. 298,803
Int. Cl. E04d *13/15*
U.S. Cl. 52—60 16 Claims



A conjoint facia and water dam for being installed on a roof deck is provided comprising facia and heading and keeper means, a cant, flashing means, and thrust means, the flashing means being characterized by having first and second wall and bearing components and an interconnecting bight portion for engaging the first wall and bearing component with keeper structure of the facia and heading and keeper means in a recess bordered by an upper facia and heading portion of the latter means for the flashing means to extend behind a facia wall of the facia and heading and keeper means having the facia wall upstanding from an end of a roof deck and the second wall and bearing component of the flashing means covering and bearing upon an end of roofing on the cant, the latter supported on the roof deck behind the facia wall, while the thrust means engages the second wall and bearing component of the flashing means with the facia and heading and keeper means in an area of the keeper structure of the latter located exteriorly of the recess for the flashing means to clamp the end of roofing under the second wall and bearing component to an inclined surface of the cant.

27,762

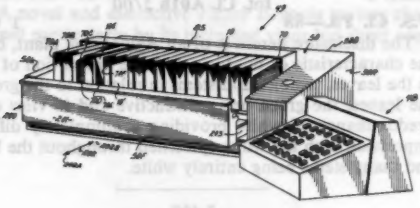
ARTICLE SELECTION SYSTEM

Robert D. Parry, deceased, late of Cincinnati, Ohio, by Margaret G. Parry, executrix, Cincinnati, Ohio, assignor to O.K. Partnership and Access Corp., both of Cincinnati, Ohio, fractional part interest to each

Original No. 3,478,877, dated Nov. 18, 1969, Ser. No. 661,758, Aug. 4, 1967. Application for reissue Nov. 17, 1971, Ser. No. 199,754

Int. Cl. B07c *5/00, 9/00*

U.S. Cl. 209—80.5 52 Claims



A retrieval system is disclosed for selecting one or more articles having a code-notched sorting edge from a plurality of similar articles stored with their sorting edges *substantailly horizontal and* aligned. The system includes means for selectively engaging sorting bars disposed transversely of the stored articles with the aligned code-notched article edges, separating means for relatively limitedly moving and partially separating, in a *substantial horizontal* direction parallel to their sorting edges, articles notched in conformity with the engaged sorting bars and those not conformingly notched, and lock means for positively locking nonconformingly notched articles to permit further separation of the conformingly and nonconformingly notched articles by continued relative movement in the same direction used to effect partial separation of the articles.

27,763

TELESCOPIC JIB WITH A TELESCOPIC INCLINABLE END MEMBER FOR CRANES

Jean Fauchers, Sein, France, assignor to Richier, Paris, France

Original No. 3,620,379, dated Nov. 16, 1971, Ser. No. 888,726, Dec. 29, 1969. Application for reissue July 11, 1972, Ser. No. 270,735

Claims priority, application France, Dec. 30, 1968, 182,223

Int. Cl. B66c *23/06*

U.S. Cl. 212—55 3 Claims

A telescopic jib for a crane, the jib being provided with an inclinable telescopic end element which is slidable in the internal element of the jib and can be fixed to this element in various positions when it is aligned therewith, by pinning or the like, and which when in a fully extended position can assume various inclinations relative to the jib, the said end element then being capable of pivoting around the fixing pin and of being fixed in the selected inclined position by means of another pin or the like.

PLANT PATENTS

GRANTED SEPTEMBER 18, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,395
PEONY PLANT

Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005

Filed Mar. 9, 1972, Ser. No. 233,365
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of peony plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous, multi-stemmed and upright habit of growth, very large foliage of an attractive deep green color, a free blooming habit, a neat, compact, bomb-shaped flower form, with ruffled and crinkled guard petals, a distinctive, attractive and unusual flower color, with the outer petals being pale pink, striped and splotched with darker pink hues, and with the flower center having marked tones of cream, lemon and yellow colors, and an outstanding flower fragrance.

3,396
DISTINCT VARIETY OF PHILODENDRON PLANT

Robert H. McColley, P.O. Box 17126, Orlando, Fla. 32810

Filed Apr. 10, 1972, Ser. No. 242,844
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

The disclosure hereof is of a Philodendron plant of compact form, having leathery leaves which in their immature stage are of a greyish brown, and maturing become olive grey, producing a general two-color effect which in dark conditions is almost black.

3,397
DISTINCT VARIETY OF PHILODENDRON PLANT

Robert H. McColley, P.O. Box 17126, Orlando, Fla. 32810

Filed Apr. 10, 1972, Ser. No. 242,845
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

The disclosure hereof is a Philodendron plant having characteristics of particular density of growth, with wide leaves, short petioles and close internodes, the durability of the plant without watering at long intervals is an important aspect, the leaves being tough and leathery with very shiny appearance, even more so than usual Philodendrons.

3,398
DISTINCT VARIETY OF PHILODENDRON PLANT

Robert H. McColley, P.O. Box 17126, Orlando, Fla. 32810

Filed Apr. 10, 1972, Ser. No. 242,848
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

There is disclosed a new variety of Philodendron plant, characterized by the substantial volume of moderate reddish brown leaves at maturity, compact dense growth, the leaves being very thick and rubbery with large diameter stems, the general color of the plant being distinctive in that it includes the reddish and green contrast resulting from the breeding.

3,399
DISTINCT VARIETY OF AGLAONEMA PLANT

Robert H. McColley, P.O. Box 17126, Orlando, Fla. 32810

Filed Apr. 10, 1972, Ser. No. 242,849
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

The disclosure herein is of an Aglaonema plant, having the characteristic of producing a large proportion of white in the leaves, petioles and stems in relation to the green of the leaves, the green being distinctive and in view of the predominance of white providing a completely different impression with the white splotched throughout the leaves and many stems being entirely white.

3,400
KOREAN MOUNTAIN ASH TREE

William Flemer III, Princeton, N.J., assignor to Treesearch, Kingston, N.J.

Filed May 8, 1972, Ser. No. 251,499
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 1 Claim

1. A new and distinct variety of mountain ash tree of the Korean mountain ash species botanically known as *Sorbus alnifolia*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an exceptionally vigorous habit of growth, a narrow-oval and very upright tree form in comparison with the normal habit of Korean mountain ash trees which are more spreading and often drooping in habit, thick and leathery leaves which are very resistant to physiological leaf scorch in hot weather, showy clusters of white flowers which bloom in the month of May in New Jersey, heavily borne bright red fruits which last late into the winter season without losing their color, and especial suitability for street tree plantings where pedestrian and vehicle clearance is essential.

3,401
CHRYSANTHEMUM PLANT

Barrie John Machin, Chichester, England, assignor to Framptons Nurseries Limited, Sussex, England

Filed Aug. 30, 1971, Ser. No. 176,340
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—77 1 Claim

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a wiry, upright plant with incurving, decorative white flowers having from 220 to 250 ray petals and 30 to 100 disc petals, excellent resistance to damping off under humid conditions, and an improved response time of 1½ weeks during short day seasons in poor light conditions.

3,402
WHITE ROSE PLANT

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co. Inc., Richmond, Va.

Filed Feb. 7, 1972, Ser. No. 224,349
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—23 1 Claim

A new variety of rose plant bred for greenhouse production of cut flowers and distinguished by its abundant

and continuous production of an almost pure white flower of excellent form, borne on medium to long moderately strong stems, and having a relatively long vase life at living room temperatures.

3,403

BEGONIA PLANT

Siegfried Merholz, Krefeld, Germany, assignor to Mikkelsens Inc., Ashtabula, Ohio

Filed Apr. 12, 1972, Ser. No. 243,485
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 1 Claim

1. A novel and distinctive *elatior Begonia* variety characterized particularly by its increased vigor but short compact growth, with close internodes; the high degree of red pigmentation in the stems, leaf petioles, and foliage thereby giving an overall reddish cast to the plant, with the additional color penetration of the foliage adding considerable contrast to the bright orange red color of the bracts; its very floriferous habit with excellent quality blooms of larger than average size when compared to the parent variety; its high quantity of excellent foliage possessing a high degree of resistance to common mildew; its characteristic of being vegetatively propagated from leaf cuttings that produce vigorously growing adventitious shoots; by its ability to be produced under controlled environmental conditions on a year around basis, and by its excellent keeping qualities under normal household conditions.

PATENTS

GRANTED SEPTEMBER 18, 1973

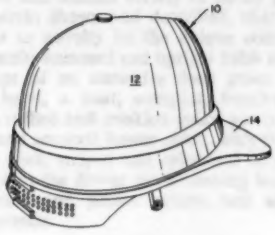
GENERAL AND MECHANICAL

3,758,889

SHOCK ABSORBING SAFETY HELMET

William B. Erb, Atlanta, Ga., assignor to Erb Plastics, Inc., Woodstock, Ga.

Filed Dec. 8, 1972, Ser. No. 313,302
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 B **9 Claims**



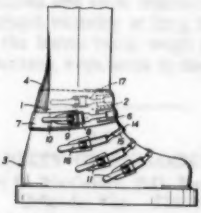
A shock absorbing safety or protective helmet of the hard-hat type having a head engaging suspension system which is removably interconnectable in the helmet, incuding free crossed crown straps, a detachable size adjustable headband and nape strap, and a detachable soft pliable sweatband, the entire suspension system being mountable by suspension lugs at the free ends of the crossed straps, the lugs having lateral side shear pins and being slidably suspended in holders on the interior of the helmet shell, the lugs and shear pins serving to resiliently resist seating of the lugs in the holders and thereby increase absorption of impact shocks on the helmet.

3,758,890

ARRANGEMENT FOR CONNECTING A SKI PANTS LEG TO A SKI BOOT

Eric Georg Selzer, Vienna, Austria, assignor to EXI Erzeugung von Sportbekleidung Gesellschaft G.m.b.H.

Filed Sept. 23, 1971, Ser. No. 183,137
Claims priority, application Austria, Aug. 2, 1971, A 6729/71
Int. Cl. A41d *1/08*
U.S. Cl. 2—232 **10 Claims**



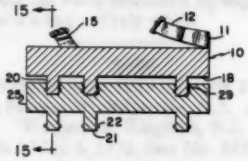
To secure the lower end of a ski pants leg over and in positive engagement with the outer surface of a ski boot, an elastic insert is provided in the pants leg so that it can expand in the circumferential direction and fit closely over the upper portion of the ski boot. A strap with an adjustable buckle is secured to the lower end of the ski pants leg for securing it tightly about the ski boot. Further, for assuring positive engagement, a hook is fixed to the lower end of the ski pants leg so that it can interengage with a part on the ski boot, such as a buckle. The inner surface of the lower end of the ski pants leg can be provided with suction cups or with a material having a high coefficient of friction to enhance the engagement between the lower end of the ski pants leg and the ski boot.

3,758,891

FOOT TOY

Howard Bob Geister, 223 St. Andrew's St., Hayward, Calif.

Filed June 1, 1971, Ser. No. 148,646
Int. Cl. A61f *3/00*; A63b *25/00*
U.S. Cl. 3—5 **9 Claims**



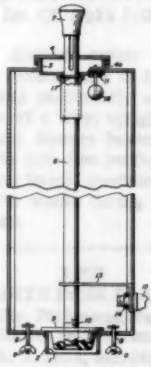
A foot toy of controllable height comprises a foot-receiving sole element which has means, such as heel and toe straps, to confine or retain an inserted foot when the device is donned, and two or more spaced projections or pegs disposed on the lower surface of the sole element. An auxiliary sole-like element is provided with recesses in its upper surface to receive the above-mentioned projections or pegs in firm but detachable relationship, and also has pegs or projections on its lower-face, so that the toy can be built up to any desired height by addition of as many auxiliary units as desired. The sole element and the auxiliary element are slightly spaced from each other whereby the loading stress is borne by the pegs.

3,758,892

WATER SAVING WATER CLOSET TANK

Juan Martinez Mendez, Crucecita A Porvenir 55, Caracas, Venezuela

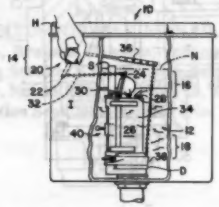
Filed Dec. 10, 1971, Ser. No. 206,638
Int. Cl. E03d *1/012*, *1/00*, *3/00*
U.S. Cl. 4—18 **5 Claims**



A water closet tank extends vertically above the inlet to the bowl and has a vertically movable plug to control the

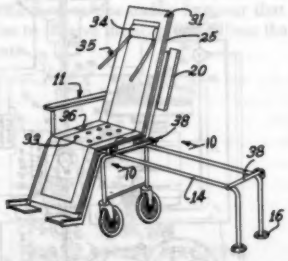
discharge of water for flushing the bowl directly from the tank and the water supply to the tank, the plug being operated by a vertical pipe projecting upwardly from the top of the tank; a float valve at the top of the tank controls the entry of water into the tank.

3,758,893
WATER SAVER TOILET BOWL FLUSH SYSTEM
William H. Smolinski, 530 S. Kenwood Ave., and Barton B. Skeen, 6020 Bellona Ave., both of Baltimore, Md.
Filed June 8, 1972, Ser. No.
Int. Cl. E03d *1/34, 5/02*
U.S. Cl. 4—67 A **11 Claims**



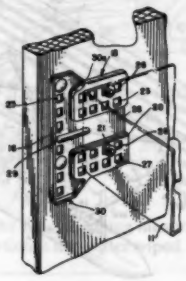
A two-level selective volume valve assembly for providing optional light and heavy flushes in toilets having storage tanks; twisting the control actuates a quick-opening flapper type upper valve which releases water from a higher level only; pushing the control actuates a lower straight-lift valve closure which carries with it the upper valve and a tube spacing the two, releasing the full capacity of the tank; single clamp installation and adjustment of the valve assembly, single-screw installation of the double acting control, and use of commonly available toilet valve parts and control parts modified to the special design of the invention are other features of the invention.

3,758,894
CHAIR-BATH
Mary L. Finley, 11440 S. Morgan St., Chicago, Ill.
Filed Feb. 11, 1971, Ser. No. 114,497
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 R **7 Claims**



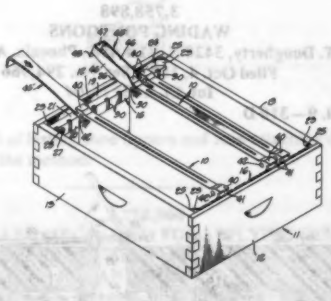
A hospital type wheelchair with a connecting bathtub means, the device comprising a pivotable frame comprised of parallel gliding rods having a pair of legs at their outer end which are receivable within a conventional bathtub so that the gliding rods extend in a horizontal position from the wheelchair, a foldable inner chair member being glidable along the metal gliding rods, the inner chair being extendable to horizontal position and upon which a rubber tub is placeable for receiving a wheelchair patient and thus permit transporting the patient over the conventional bathtub or helping himself in taking a bath.

3,758,895
BED FRAME CONNECTOR
Kenneth H. Gunter, 3285 Dato, Highland Park, Ill.
Filed June 14, 1971, Ser. No. 152,901
Int. Cl. A47c *19/00, 23/00*
U.S. Cl. 5—304 **4 Claims**



A novel connector for connecting a headboard to a bed frame which is capable of accommodating to different bolt hole locations and which is characterized by having offset bearing surfaces arranged to avoid a wobbly connection.

3,758,896
ARTIFICIAL HONEYCOMB FOR COLLECTING AND RECOVERING HONEY
Kenneth F. Croan, 2165 N. Grand Oaks, Altadena, Calif.
Filed Jan. 20, 1971, Ser. No. 107,950
Int. Cl. A01k *47/04*
U.S. Cl. 6—10 **13 Claims**



Improved means for and method of collecting and recovering honey using conventional beehive supers equipped with spacer strips to support molded plastic honeycombs. These reusable honeycombs have preformed honey cells of three quarters of their full depth in readiness for filling by bees. The upper corners of these combs include tool manipulating and handling recesses including portions cooperating with the spacer strips to space the combs properly. The spacer strips are self-gripping for installation without tools. The honey can be recovered centrifugally from a plurality of the supers. The combs may be serviced by a conventional hive tool or the invention hive tool having tong jaws for gripping the ends of the combs and breaking the combs loose and having sharp-edged tang means for scraping encrusted surfaces.

3,758,897

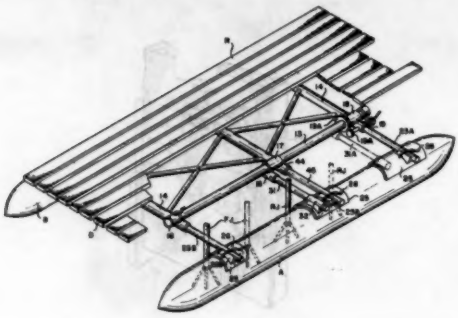
AMPHIBIOUS CAMPER

Robert H. Shaw, 131 Oakwood Ln., Ithaca, N.Y.

Continuation-in-part of Ser. No. 138,613, Feb. 29, 1971. This application Sept. 6, 1972, Ser. No. 286,745

Int. Cl. B63c *13/00*

U.S. Cl. 9—1 R 4 Claims



A process and equipment for transferring a standard truck conforming camper body from the truck onto a pontoon raft at a suitable shore location of a body of water, such as a river, lake, sea or ocean to convert the camper to serve as a houseboat. Also, the structural features of the camper body and the pontoon raft are so arranged, formed and structurally equipped as to provide for the complete transfer of the camper to the pontoon raft for transformation into a houseboat by one man working alone.

3,758,898

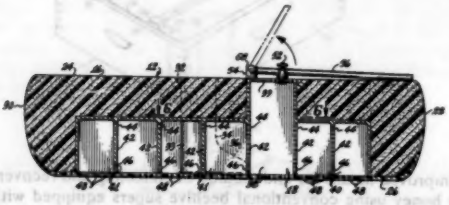
WADING PONTOONS

Earle T. Dougherty, 3420 N. 71st Ave., Phoenix, Ariz.

Filed Oct. 4, 1972, Ser. No. 294,966

Int. Cl. A63c *15/04*

U.S. Cl. 9—310 D 14 Claims



A water walking apparatus including a pair of pontoons for attachment to the lower leg portions of a user to enable him to propel himself through water. The pontoons include ballast tanks which may have means by which the user may alter the buoyancy of the apparatus during use, and also includes a plurality of hinged flippers so that the user may propel himself in a walking movement or an alternate hand operated propelling means may be employed.

3,758,899

ROTARY HYDRAULIC MACHINES

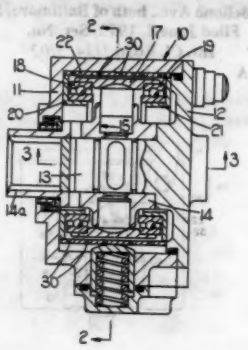
Frank George Freeman, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 10, 1971, Ser. No. 206,757

Claims priority, application Great Britain, Dec. 18, 1970, 60,179/70

Int. Cl. F01b *13/06*

U.S. Cl. 91—475 5 Claims



A radial piston hydraulic motor has a cam ring which is slidable transversely of the axis of the rotor so as to vary the eccentricity of the ring with respect to the rotor axis. The ring is engaged by a piston which is biased by a spring to urge the ring to a position of maximum eccentricity. The piston is responsive to an increase in centrifugal pressure adjacent the ring to overcome the spring and reduce the eccentricity. For a given flow the motor speed tends always to increase, resulting in high starting torque and low running torque.

3,758,900

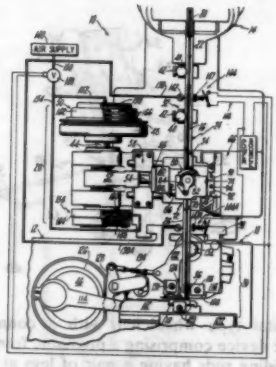
COMBINATION POINT FORMER AND THREAD ROLLER MACHINE

Robert D. Morton, West Hartford, Conn., assignor to The Hartford Special Machinery Company, Simsbury, Conn.

Filed June 3, 1971, Ser. No. 149,520

Int. Cl. B21h *3/06*; B23g *9/00*

U.S. Cl. 10—4 9 Claims



An in-line, inclined gravity feed track for automatically feeding headed work blanks in sequence through a forging type point forming station having a rotary dial indexing mechanism. The indexing mechanism is selectively adjustable relative to the forging dies, and the entire point forming sta-

tion is adjustable as a unit relative to the feed track. A thread rolling station is in aligned spaced apart downstream relation to the point forming station and effects work blank rolling movement in a substantially horizontal direction normal to the straight line path of travel of the work blanks in the feed track. A sensing system continuously monitors feeding of blanks in the feed track for deactivating operation of the point forming station.

3,758,901

APPARATUS FOR MAKING NAIL STRIPS

Roger Wainman, Brussels, Belgium, assignor to Industrial & Merchandising Services S.A., Brussels, Belgium

Division of Ser. No. 35,863, May 8, 1970, abandoned. This application Sept. 22, 1971, Ser. No. 182,889

Int. Cl. B21g 3/26

U.S. Cl. 10—29 **2 Claims**

A nail strip in the form of an elongated band of durable material formed from a blank, having in cross-section taken substantially perpendicular to its longitudinal axis, an elongated shank portion, a tip portion at one end of the shank portion and an enlarged head portion at the other end of the shank portion is formed by producing a series of spaced-apart, straight, parallel grooves in opposite faces of the blank, the grooves on either side of the blank being disposed opposite each other. The grooves define in the band a multiplicity of individual nails, the nails being connected by webs of material at the bases of the grooves. The cross-sections of the webs of material joining the nails are such that an end nail in the strip may be sheared off by the application of a predetermined driving force. The nail strip is particularly well suited for use in a mechanical, electrical or pneumatic hammer that is provided with a magazine to receive the strip and deliver the nails to the driving element.

3,758,902

SHOE LASTING MACHINE

Ronald O. C. Gadd, 25 Berridge Ln., and Frank R. Smith, 142 S. Knighton Rd., both of Leicester, England

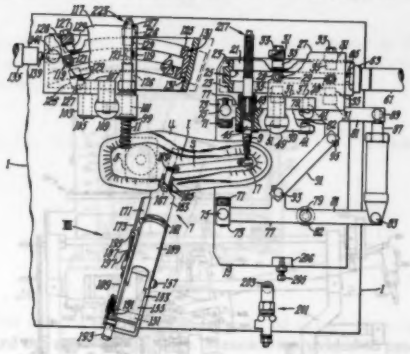
Filed Mar. 13, 1972, Ser. No. 233,991

Claims priority, application Great Britain, Mar. 11, 1971, 6,564/71

Int. Cl. A93d 2/00

U.S. Cl. 12—8.3 **3 Claims**

Machinery and methods for side lasting shoes in which a gripper pulls the upper margin intermediate of the portion to be lasted and wiping means wipes the upper margin from one end of the portion progressively toward the gripper and stops short of the gripper whereupon a second wiping means wipes toward the gripper from the other end of said portion, the



gripper releasing as the second wiping means approaches and the gripped upper portion is thereafter wiped.

3,758,903

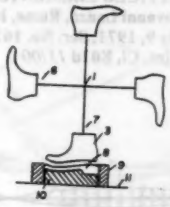
METHOD AND APPARATUS FOR UNIT MOLDING

Horace Ray Auberry, Tuscola Park, and Anton I. Liebscher, Waynesville, both of N.C., assignors to Re-Search, Incorporated, Waynesville, N.C.

Continuation-in-part of Ser. No. 78,412, Oct. 6, 1970. This application Aug. 4, 1972, Ser. No. 277,884

Int. Cl. A43d 9/00

U.S. Cl. 12—142 RS **5 Claims**



A method of lasting shoe uppers and sole-attaching devices to carry out the method.

3,758,904

METHOD AND MECHANISM FOR APPLYING CEMENT IN THE CORNER BETWEEN AN UPPER MARGIN AND AN INSOLE

Jacob S. Kamborian, deceased, late of West Newton, Mass.; by Lisbeth N. Godley, Washington, D.C.; by Michael M. Becka, Watertown, Mass.; by Jacob S. Kamborian, Jr., Lincoln, Mass. (executors), and Costa Caris, East Walpole, Mass., assignors to Jacob S. Kamborian, West Newton, Mass.

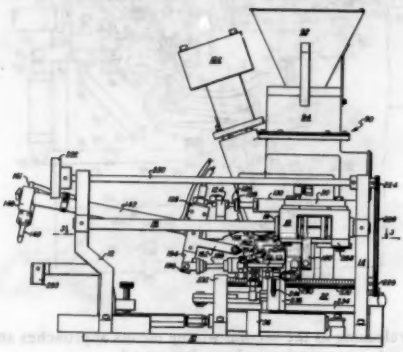
Filed Jan. 22, 1973, Ser. No. 325,701

Int. Cl. A43d 21/00; B05c 1/06

U.S. Cl. 12—142 R **26 Claims**

A mechanism for applying cement in the corners between the unwiped side portions of an upper margin, that is mounted on a last, and the corresponding side portions of the periphery of an insole that is located in the last bottom. The upper margin side portions are located between the previously wiped toe and heel portions of the upper margin. The mechanism includes a pair of nozzles that travel in unison along the entire lengths of the corners, while the last is supported bottom-up, from the boundaries of the side portions of the upper margin

with the wiped toe portion of the upper margin and the boundaries of the side portions of the upper margin with the wiped heel portion of the upper margin. During this travel, the nozzles are yieldably urged downwardly of the insole and outwardly into the corners and the nozzles are mounted to enable them to have relative movement with respect to each other lengthwise of the last so that they can affect this relative movement when arriving at the boundaries.

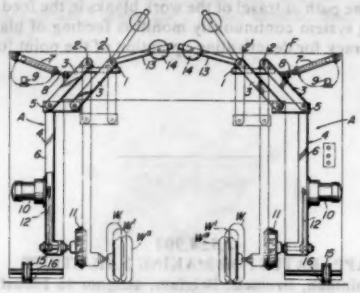


3,758,905
CABLE TENSOSTRUCTURE INCLUDING STIFFENING LATTICED ELEMENTS
Lucio Baratta, Via Giovanni Lanza, Rome, Italy
Filed July 9, 1971, Ser. No. 161,860
Int. Cl. E01d *11/00*
U.S. Cl. 14—19 **3 Claims**

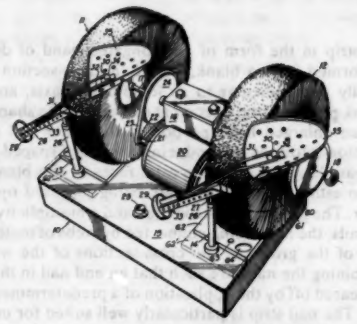
A cable tensostructure including at least two pairs of cables, each pair being operative in a vertical plane, the planes being substantially parallel to each other, two pluralities of transverse members each comprising a latticed body of substantially prismatic configuration constituting a transverse connection between the pairs of cables while carrying the platform elements forming the runway plane along which the pedestrian and vehicular traffic move.

3,758,906
CAR WASHING APPARATUS
Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya, Japan
Filed Apr. 30, 1971, Ser. No. 138,995
Claims priority, application Japan, June 3, 1970, 45/47181
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **4 Claims**

Car washing apparatus including brush means for washing the roof portion of a car, brush means for washing both sides of the car and brush means for washing outer side surfaces of wheels on the car, said last mentioned brush means being displaceable transversely and vertically in accordance with the size of the car.



3,758,907
SHOE SHINE APPARATUS
George D. Lashley, 3098 Old Norcross Rd., Tucker, Ga.
Filed Feb. 7, 1972, Ser. No. 224,117
Int. Cl. A47l *23/02, 23/11*
U.S. Cl. 15—31 **12 Claims**



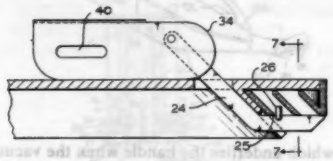
Apparatus for use in shining shoes, including a pair of power driven shoe brushing means rotatable about a common horizontal axis, with each shoe brushing means operatively associated with a shoe supporting means. Each of the shoe supporting means is mounted for power rotation about a vertically disposed axis and includes releasable retaining means for engaging the interior of a supported shoe. The shoe supporting means are detailed in location relative to the brushing means so that all polished surfaces of a pair of supported shoes are contacted during rotation of the brushing means and shoe supporting means. A single motor is operatively associated with the shoe brushing means and the shoe supporting means for effecting simultaneous rotation thereof in a shoe shining operation. The shoe shining apparatus includes polish dispensing means operatively associated with each of the brushing means, with the polish dispensing means including cover means supported between the polish dispensing means and the shoe brushing means and selectively movable between closed and opened conditions to permit polish to be applied to shoes during rotation of the brushes.

3,758,908

BRUSH MOUNTING MEANS

Allan M. Maltarp, Bogota, Colombia, assignor to Canadian Wire Brush Co., Barrie, Ontario, Canada

Filed Feb. 8, 1972, Ser. No. 224,493
Int. Cl. A46b *13/02*
U.S. Cl. 15—180 8 Claims



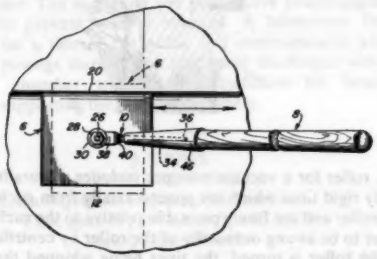
In a street sweeping brush, a plurality of sector shaped bristle mounting members are designed to be clamped on a mounting member for easy replacement.

3,758,909

WALKING-TYPE CONCRETE EDGER

Joe Granger, Jr., 509 Tennessee St., Clovis, N. Mex.

Filed July 1, 1971, Ser. No. 158,940
Int. Cl. E01c *19/12*
U.S. Cl. 15—235.8 1 Claim



A concrete edger comprising a rigid plate wherein at least one marginal edge is provided with a depending lip-like flange joined to said edge by a concave-convex contouring edge-shaping web. An elongated push-pull handle is disposed at an oblique angle and can be caught hold of and conveniently utilized while the user is either standing or walking. The central top side of the plate or blade is provided with an integral upstanding stud by way of which a connector on the forward lower end of the handle is detachably and adjustably coupled to the stud. The handle can be operatively united with the plate and rotated relative thereto to assume the position desired.

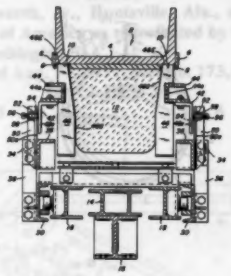
3,758,910

COKE OVEN DOOR CLEANER

Warren D. Lakeberg, DeMotte, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1971, Ser. No. 195,086
Int. Cl. C10b *43/04*
U.S. Cl. 15—93 A 11 Claims

A coke oven door cleaner has a vertically reciprocating frame which resiliently supports a pair of tool brackets. A vertical tool holder is mounted on each tool bracket. Each tool holder carries a plurality of vertically spaced tools in the form of a stainless steel plate having a scraping edge at its front end and a scraping edge along one side. The end scraping edge engages the bottom of the gas channel on the door frame and the side scraping edge which is shaped to conform to the door plug scraps the plug. Each tool plate extends downwardly toward the end scraping edge. Means are provided to prevent the tool brackets from spreading.

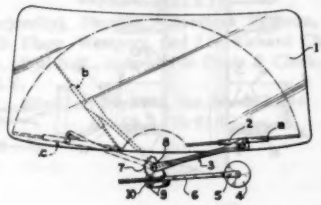


3,758,911

WINDOW WIPER IN PARTICULAR FOR A VEHICLE WINDSCREEN

Hubert de Lavenne, Meudon, and Andre Leger, Sartrouville, both of France, assignors to Automobiles Peugeot, Paris, and Regie National Des Usiner Renault, Billancourt, both of France

Filed June 16, 1971, Ser. No. 153,576
Claims priority, application France, June 16, 1970, 7022035; Nov. 30, 1970, 7042999; May 13, 1971, 7117379
Int. Cl. B60s *1/34*
U.S. Cl. 15—250.23 4 Claims



Windscreen wiper of particular utility as a single wiper for a windscreen instead of the usual two wipers. The wiper blade is pivotable about the wiper arm and a link connects a point of the blade offset from the pivot axis of the blade to a journal which is radially offset with respect to the pivot axis of the arm. Consequently, as the wiper arm swings across the windscreen, the wiper blade pivots slightly relative to the arm and wipes a larger area of the windscreen since the blade is practically parallel to the bottom edge of the windscreen at each extreme position.

Arrangements are disclosed for allowing the link to follow the movement of the arm when the latter is swung away from the windscreen for manually cleaning the latter.

3,758,912

BALL CLEANING DEVICE

Moritada Shibuya, 601-14 Nishinagai-cho, Sumiyoshi-ku, Osaka, and Iku Shibuya, c/o Matsubara Apt. House, 2470 Handa, Shibukawa-shi, Gumma-ken, both of Japan

Filed May 25, 1972, Ser. No. 256,744
Int. Cl. A63b *47/04*; A63d *5/10*
U.S. Cl. 15—302 8 Claims

A device for easily and quickly cleaning the balls used in a bowling or tenpins game and soiled with the oil applied to an

alley, the dirt from the bowlers' hands and the like without interrupting the progress of the game. The device essentially comprises means for applying a cleansing agent onto the surface of the ball to be cleaned, means for wiping the ball, and means for drying the ball.

3,758,913

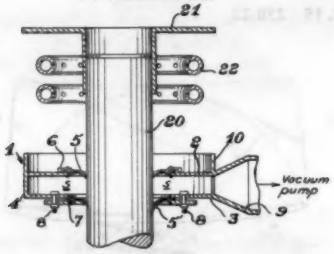
APPARATUS FOR REMOVAL OF COOLANT FROM METAL SURFACES

Herbert Elliott, and Frank A. Simons, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 59,075, July 29, 1970, Pat. No. 3,653,425. This application Nov. 17, 1971, Ser. No. 199,418

Int. Cl. A47l 7/00

U.S. Cl. 15—308 **3 Claims**



An apparatus for removing coolant from a moving metal surface which comprises a housing defining a chamber, having an opening therein facing the moving metal surface; a flexible contacting member attached to at least the leading edge of the housing opening, and preferably to both the leading and trailing edges of the housing opening, in contact with the metal surface; and suction means connected to the housing to evacuate the chamber. Such apparatus can be used in a method of removing coolant from metal surfaces by contacting the surface with a flexible member and passing the surface through a suction zone.

3,758,914

VACUUM CLEANER WITH MOVABLE HANDLE STRUCTURE

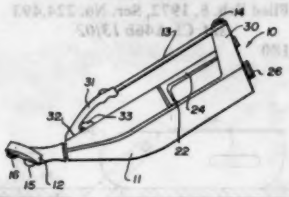
Donald L. Nupp, St. Joseph, Mich., and James R. Hilmanowski, St. Paul, Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 6, 1971, Ser. No. 186,982

Int. Cl. A47l 5/24

U.S. Cl. 15—329 **13 Claims**

A vacuum cleaner having a handle movably carried on the body for selectively arranging the vacuum cleaner as a floor carried, upright vacuum cleaner, or a portable hand-carried vacuum cleaner. The vacuum cleaner includes a removable dirt box which underlies the handle when the vacuum cleaner is arranged as a portable hand-carried unit.



3,758,915

ROLLER FOR COMBING SHAG RUGS

Stephen J. Zeski, and Earl J. Carter, both of c/o Swanson Electric Shop, 1009 Broadway, Rockford, Ill.

Filed Sept. 13, 1971, Ser. No. 179,794

Int. Cl. A47l 9/04; A47b 13/00

U.S. Cl. 15—366 **6 Claims**

A roller for a vacuum sweeper includes a plurality of relatively rigid tines which are spaced axially from each other on the roller and are freely pivotable relative to the surface of the roller to be swung outwardly of the roller by centrifugal force as the roller is turned, the tines being whipped through the fibers of a shag rug to comb up the shag.

3,758,916

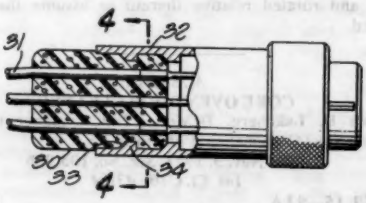
HEAT RECOVERABLE ARTICLE AND PROCESS

Judson Douglas Wetmore, San Mateo, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 812,789, April 2, 1969. This application Dec. 6, 1972, Ser. No. 312,702

Int. Cl. F16l 11/10; H01b 17/26; B29d 27/00

U.S. Cl. 16—2 **6 Claims**

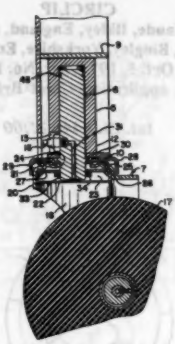


A heat recoverable article having intersticed walls, the interstices being filled with a compressible fluid so that the wall thickness of the article can be varied without appreciably varying the length of the article, together with the process of making such articles.

3,758,917
CASTER AND MOUNTING STRUCTURE

Gary J. Schroer, Kansas City, Mo., assignor to Schroer Manufacturing Company, Inc., Kansas City, Mo.

Filed Jan. 10, 1972, Ser. No. 216,384
Int. Cl. B60b 33/00
U.S. Cl. 16—36 3 Claims

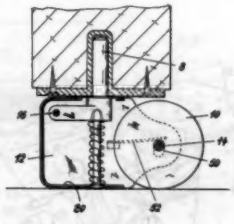


A caster and mounting structure particularly adapted for use with supported structures which are frequently cleaned in a manner removing lubricant from the caster. The structure to be supported has suitably arranged sockets or mounting portions each to receive a pintle supported on a horn for rotation of the caster. The mounting and pintle have interengageable surfaces to prevent relative rotation. A lubrication fitting mounted on a side of the pintle and communicates with a lubricant passage through the pintle and discharges within a lubricant chamber to provide lubrication for bearings rotatably supporting the horn on the pintle.

3,758,918
FURNITURE WHEELS

Kai Bruun, Bushajvej 33, Hojbjerg, Denmark

Filed June 17, 1971, Ser. No. 154,001
Int. Cl. A47b 91/00
U.S. Cl. 16—44 7 Claims

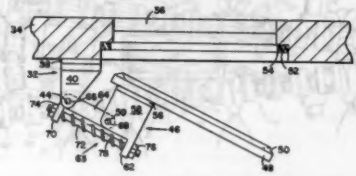


1. A furniture support swivel wheel unit comprising a wheel mounted rotatably in a wheel holder, the wheel holder being swingably about a vertical shaft the axis of which is horizontally spaced from the axis of rotation of the wheel, said shaft being operable to swingably connect said wheel unit with the lower end of a furniture leg, the wheel being mounted so as to be vertically movable relatively to the shaft and associated with a spring for biasing the wheels in downward direction, the wheel holder having a lower surface which is operable to be rested plane against the floor in response to the wheel unit being pressed downwardly relatively to the wheel against the action of the bias. The bias is adjusted in such a manner that the piece of furniture is supported on the wheels when in unloaded position, whilst said lower surface of the wheel holder is pressed down against the floor when the furniture is loaded.

3,758,919
HINGE

Thomas E. Dilworth, Jr., Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 19, 1971, Ser. No. 173,187
Int. Cl. E05d 3/06
U.S. Cl. 16—163 2 Claims

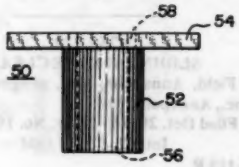


A hinge for mounting a cover over an access opening in a wall that includes one hinge part mounted on the wall and a second hinge part on the cover. A link having one of its ends pivotally mounted in each hinge part is connected between the two hinge parts to allow perpendicular motion of the cover with respect to the wall during initial opening and final closing movements of the cover. A resilient adjustment means is connected between one end of the link and the hinge part mounted on the cover for controlling the angular position of the hinge parts relative to one another.

3,758,920
PULL KNOB ASSEMBLY WITH INTERCHANGEABLE PLUG INSERTS

Lew Dobrjanskyj, Flushing; Ruediger Einhorn, Katonah; Frank D. Flagg, Westport, and Lee Richard Chasen, Port Chester, all of N.Y., assignors to Coats & Clark, Inc., New York, N.Y.

Filed July 17, 1972, Ser. No. 272,404
Int. Cl. A47b 95/02
U.S. Cl. 16—121 24 Claims

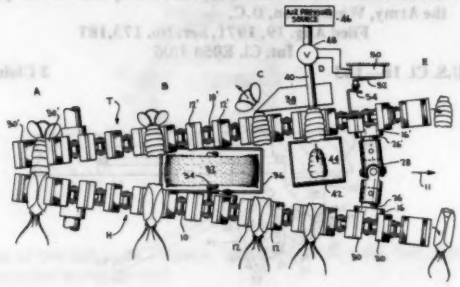


A pull knob assembly utilized for attachment to doors drawers and the like. The assembly comprises a body portion having a flange to be grasped for opening and closing of the door. A set of interchangeable plug elements fit within the body portion. One plug element is completely enclosed within the body portion while the other plug element projects slightly therefrom to provide a mounting for a grasping element to be used instead of the flange. A complete knob unit is assembled by inserting a plug element into the body portion, and this includes an internal fastening device that cooperates with an external fastening device for mounting the knob unit on the door. The internal fastening device may be formed either in the plug element or it may be formed in the body portion, in which case the plug element is formed with leg members slidably mounted on either side of the internal fastening device.

3,758,921
CRAWFISH PEELER

Edgar J. Ingalls, Kendalwod Rd., Baton Rouge, La.

Filed May 13, 1971, Ser. No. 142,944
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 3 Claims



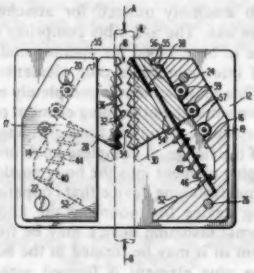
A machine for automatically peeling crawfish or other crustaceans in which the crustacean to be peeled has its head and tail respectiely held between grippers on separate conveyers having operative runs which diverge in the direction of their movement. The grippers of the two conveyers are in laterally opposed pairs which are located abreast of and adjacent to each other at the loading ends of the conveyers to receive the head and tail sections respectively of the crustacean and thereafter to separate the head and tail sections as they move apart due to the divergence of the operative conveyer runs, with the meat remaining in the tail section. The grippers of each pair are automatically spread apart for loading and discharge as the conveyers curve around supporting sprockets at the loading and discharge ends of each operative conveyer run and are in gripping engagement with the head and tail sections respectively of the crustacean throughout movement of the operative run between such sprockets.

Means is provided for removing any fat clinging to the head section. The meat retained within the tail section is ejected by shearing off the extremity of the tail section incident to movement of its associated conveyer, then injecting a plast of pressurized air into the tail section through the opening formed by such shearing operation, the empty shells then being discharged at the ends of the operative runs.

3,758,922
SLIDING WEDGE CLEAT

Gregory A. Field, Annapolis, Md., assignor to Sand R. Associates, Inc., Annapolis, Md.

Filed Oct. 29, 1971, Ser. No. 193,877
Int. Cl. F16g *11/04*
U.S. Cl. 24—115 R 4 Claims

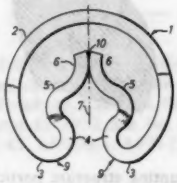


A pair of sliding wedges having oppositely directed parallel frictional gripping surfaces are mounted on a base and slide on inclined wedging surfaces. The wedges are spring biased to closed nip position, but permitted to slide against the bias of the spring to facilitate entry of a line between the opposed frictional gripping surfaces while preventing retrograde movement by the presence of the line within the nip.

3,758,923
CIRCLIP

Stanley Morgan Maude, Ilkley, England, assignor to Anderton Springs Limited, Bingley, Yorkshire, England

Filed Oct. 5, 1971, Ser. No. 186,825
Claims priority, application Great Britain, Feb. 19, 1971, 5,000/71
Int. Cl. A44b *21/00*
U.S. Cl. 24—256 7 Claims

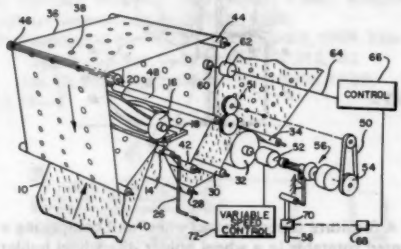


The invention comprises a circlip including a part-ring shaped body part with its end turned inwardly to form a pair of internal integral legs spaced apart where they turn inwardly and in back-to-back contact at their ends. The arrangement is such that three stressed working points of re-assertion are provided in triangular relationship.

3,758,924
APPARATUS FOR SHEARING PATTERNS ON PILE FABRICS

William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 204,601, Dec. 3, 1971, abandoned. This application Nov. 30, 1972, Ser. No. 310,849
Int. Cl. D06c *23/02*
U.S. Cl. 26—16 1 Claim

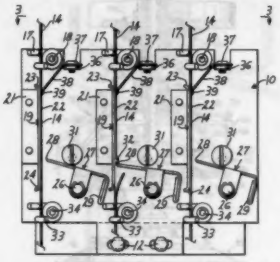


A continuous belt is formed with apertures in a selected pattern and guided into face to face engagement with a running cloth web. A shearing revolver, cooperating ledger knife and rest are located across the line of contact between the belt and the web to shear cloth fibers extending through the apertures of the belt and thereby produce an embossed pattern on the cloth. A control system is provided between the belt and the cloth drive to maintain synchronous movement between the belt and the cloth.

3,758,925
APPARATUS FOR SENSING SLUBS CARRIED BY YARN

Anthony T. Desaulniers, Rt. 1 300 May Ave., Talladega, Ala., and James A. Byars, 2917 Madden Dr., Columbus, Ga.

Filed Feb. 4, 1972, Ser. No. 223,509
Int. Cl. D01h 13/22; D02j 7/00
U.S. Cl. 28—64 2 Claims

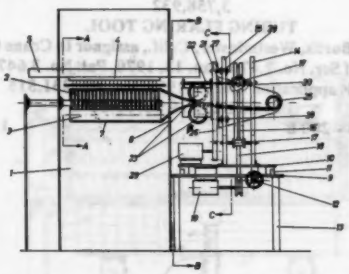


Anvils are mounted adjacent individual strands of yarn intermediate separate supply bobbins and twisting apparatus. A member carrying a cutter blade at one end is pivotally mounted intermediate its ends adjacent one side of each anvil with the blade being movable selectively to a first position adjacent the anvil and to a second position spaced from the anvil for passing a strand of yarn therebetween. Each blade is positioned relative to its anvil to be engaged by a slub carried by an adjacent moving strand and moved thereby to said first position to sever the adjacent strand. Each blade is urged toward and remains in said second position until it is engaged by a slub.

3,758,926
METHOD OF MAKING A TUBULAR NEEDLED WEB

Richard Dilo, Eberbach/Neckar, Germany

Continuation-in-part of Ser. No. 882,391, Jan. 7, 1970, which is a division of Ser. No. 741,492, July 1, 1969, Pat. No. 3,530,557. This application Feb. 17, 1971, Ser. No. 116,030
Int. Cl. D04h 18/00
U.S. Cl. 28—72.2 R 1 Claim

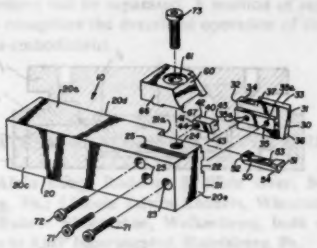


A continuous fabric tubing is prepared by helically winding non-woven webs on a rotating drum in partly overlapping relationship, stitching the partly superimposed turns to each other by needling, and axially pulling the tubing so formed from the drum. The take-up mechanism, which pulls the tubing from the drum, rotates with the drum, and an automatic cut-off mechanism may be provided for automatically cutting the continuous tubing to uniform, adjustable lengths. The tubing may consist entirely of monofilaments and other smooth fibers not capable of normal felting.

3,758,927
CUTOFF TOOL

William B. Stein, Barberton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Dec. 13, 1971, Ser. No. 207,056
Int. Cl. B26d 1/00
U.S. Cl. 29—96 4 Claims

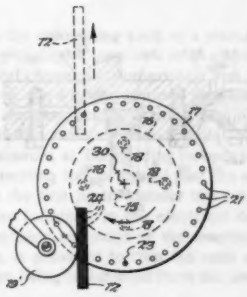


An improved cutoff tool made up of a tool body, a support blade clamped thereto, and a clamping member adapted to be secured to the tool body and overlie the support blade so that an insert bit and stop member may be clamped between the clamping member and the support blade, with the support blade and the tool body interlocking so as to provide added rigidity and extreme compactness.

3,758,928
TOOL FOR USE IN BOOK BINDING

Francis R. Blake, Hamburg, N.Y., assignor to Peter Cooper Corporation, Gowanda, N.Y.

Filed July 3, 1972, Ser. No. 268,681
Int. Cl. B26d 1/12
U.S. Cl. 29—105 A 5 Claims

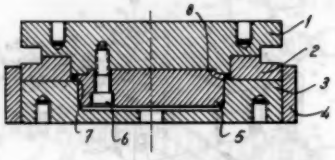


An interlocking roughing bit for use in book binding and for providing groove with a shingled side on the edge of a plurality of adjacent pages which is to receive adhesive comprising a body portion for mounting on a rotating member having a center of rotation, a cutting bit on said body portion, a leading relatively sharp cutting edge on said cutting bit, first and second diverging sides extending from the cutting edge toward the trailing edge on said bit, said first side being closer to the center of rotation than said second side and having a portion extending substantially perpendicularly to a radius drawn from the center of rotation to said first side, and said second side extending at an acute angle with respect to said first side with said second side forming a plurality of overlapping flaps from said adjacent pages to provide the shingled side of said groove.

3,758,929
MANUFACTURE OF A WIPING OR PISTON RING

Manuel Punsola Fabregat, Portola St., 14, P.O. Box 589, Barcelona, Spain

Filed Mar. 29, 1971, Ser. No. 129,017
Int. Cl. B23p *15/06*
U.S. Cl. 29—156.6 8 Claims

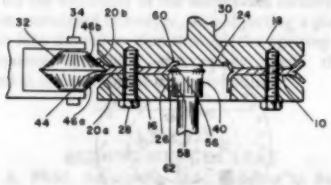


This disclosure refers to improvements in the manufacture of a wiping ring comprising a grooved ring segment having an expander spring therein that presses radially all the exterior circumference of the segment against the wall of a surrounding cylinder and which radial pressure is graduated by the thickness and section of the expander. The segments are manufactured by compression, by means of a die-mold, the parts of which are partially or totally interchangeable.

3,758,930
METHOD OF MAKING HUB OR BEARING HOUSING, AND PULLEY

Charles C. Frost, Kentwood, and Siegfried K. Weis, Grand Rapids, both of Mich., assignors to Frost Engineered Products, Inc., Grand Rapids, Mich.

Filed Nov. 18, 1971, Ser. No. 199,985
Int. Cl. B21d *53/26*; B21k *1/28, 1/42*
U.S. Cl. 29—159 R 10 Claims

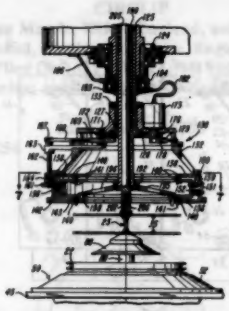


This disclosure relates to a novel hub or bearing housing, pulley, and the like and to the method of fabricating such hub or bearing housings, grooved metal pulleys, and the like in which a hub flange forming the housing is formed from a one-piece metal disk utilizing metal-splitting techniques. The disk is provided with an inner opening in its central portion and is held between a pair of die members between the inner opening and its outer diameter thereby leaving the inner opening free so that the disk may be split and expanded toward the die. Flanges formed on the inner diameter of the die are shaped to receive and form a hub or bearing housing in the disk as the material is split and expanded toward the die. In another embodiment of the invention, a pulley groove and bearing housing are formed from a one-piece metal disk in a simultaneous splitting operation. Flanges on the inner and outer diameters of a pair of cooperating die members are shaped to receive and form a hub or bearing housing about the inner diameter while simultaneously receiving and forming the rim or pulley groove about the outer diameter of the disk.

3,758,931
WHEEL ASSEMBLY METHOD AND APPARATUS

Richard A. Patterson, St. Paul, Minn., assignor to The Huffman Manufacturing Company, Miamisburg, Ohio

Filed Dec. 29, 1971, Ser. No. 213,342
Int. Cl. B21f *39/00*; B21k *1/34*
U.S. Cl. 29—159.02 24 Claims

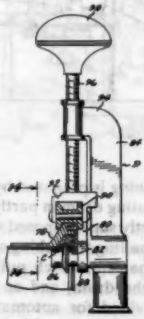


A bicycle wheel rim is placed on a fixture mounted on a rotary indexing transfer table, and a plurality of spokes are attached to a hub which is supported by the fixture in concentric relation with the rim. The table indexes, and the hub and attached spokes are shifted by the fixture to a rotatable spoke orienting head which grips and spins the hub causing the spokes to be centrifugally positioned in substantially uniform angularly spaced relation. The outwardly extending spinning spokes are picked up by corresponding magnets carried by the rotating orienting head, and an inner group of spokes are shifted into crossing relation with an outer group of spokes. The hub and crossed spokes are then transferred to the table fixture where the oriented spokes are positioned in outwardly converging relation aligned with corresponding holes formed in the rim. The table indexes again to move the fixtured hub, rim and angularly positioned crossed spokes to a device which simultaneously extends corresponding nut-like threaded fasteners or nipples through the holes in the rim and tightens the nipples onto the end portions of the spokes to a predetermined uniform torque. The table then indexes to transfer the assembled wheel to a discharge station where the wheel is ejected from the table fixture by pins which extend upwardly to press the rim upwardly from the fixture.

3,758,932
TUBING FLARING TOOL

Wilson A. Burtis, Westminster, Calif., assignor to Crane Co.

Division of Ser. No. 2,470, Jan. 13, 1970, Pat. No. 3,647,246.
This application Mar. 3, 1972, Ser. No. 231,515
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 B 1 Claim



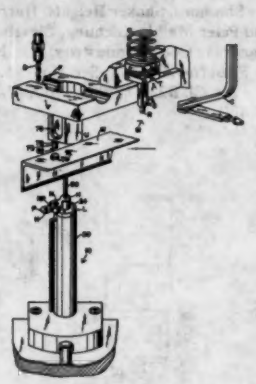
A tool for use in forming a flare on the end portion of a length of tubing after a ferrule has been mounted on said end portion.

3,758,933

PRESSURE FOOT GUIDE DEVICE

Donald S. Gross, Sunnymead, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Aug. 3, 1970, Ser. No. 60,247
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P 3 Claims



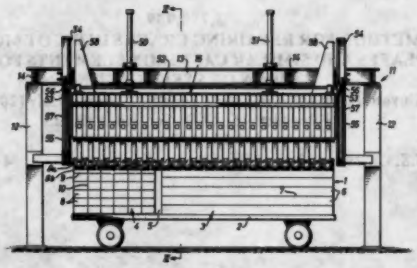
A drill and rivet aligning pilot pin on a lower pressure foot passes through a hole in a nut plate to index the same on the lower pressure foot. An upper pressure foot has a stepped projection which is receivable into an aperture in the workpiece and is also receivable into the nut of the nutplate as the pressure feet are brought together to clamp the nutplate and workpiece therebetween. The nut and workpiece aperture are thus properly aligned for drilling of the workpiece and the insertion and squeezing of a rivet.

3,758,934

METHOD OF AND APPARATUS FOR SEPARATING LIGHTWEIGHT (AERATED) CONCRETE ELEMENTS

Borje Hasselgren, Taby, and Wilhelm Sebardt, Bromma, both of Sweden, assignors to Intong Aktiebolag, Hallabrottet, Sweden

Filed Feb. 24, 1972, Ser. No. 229,057
Claims priority, application Sweden, Feb. 24, 1971, 2352/71
Int. Cl. B28b *13/04*; B23p *19/00*, *19/02*
U.S. Cl. 29—200 D 16 Claims



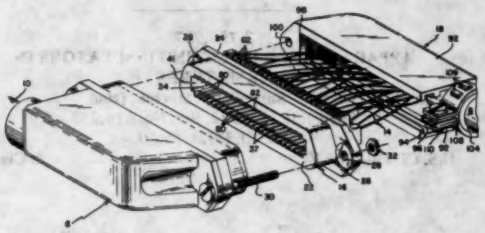
Apparatus for separating a stack of adhering lightweight concrete elements comprises upper and lower pairs of mutually opposite elongate clamping units, the units of each pair being mounted for generally horizontal relative clamping movement toward each other so that the two pairs can grip adjacent elements in the stack. At least one clamping unit, preferably in the upper pair, is mounted for movement normal to the clamping direction so as to pivot the upper element relative to the adjacent lower element and separate these elements. This unit, and preferably all the units, comprises a multitude of single clamping jaws arranged for individual and independent movement in the clamping direction so as to compensate for possible irregularities in the elements of the stack. The clamping jaws are carried by pivotally mounted arms, the arm being pivotally mounted on a vertically movable carrier so that the clamping jaws can be moved downwardly to effect separation of all elements in the stack. This avoids the necessity of removing an upper separated element before the next lower element can be separated. A method of separating the elements comprises the described operation of this preferred apparatus embodiment.

3,758,935

APPARATUS FOR SECURING WIRES TO TERMINALS IN CONNECTORS

Robert Alvin Long; Roderick William Over, both of Harrisburg, Pa.; Lincoln Edwin Roberts, Winston-Salem, and John Robert Shoemaker, Walkertown, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 27, 1971, Ser. No. 147,578
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 MW 12 Claims



Apparatus for connecting each of a plurality of conductors to each of a plurality of terminals in an electrical device, such as an electrical connector, comprises a first jig for holding the electrical device in a predetermined position and a second jig for locating the conductors in predetermined positions. The conductors in the conductor holding jig are spaced apart by the same distances as the spacing between the terminals. A conductor inserting tool is moved past the second holding jig and towards the first jig to transfer the conductors from the first jig to the terminals in the electrical device. A shearing means, comprising one edge of the inserting tool and a stationary edge, is provided to trim the ends of the conductors while they are being transferred from the first jig to a connector.

3,758,936

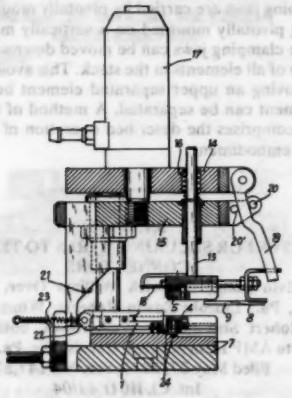
MACHINE FOR AUTOMATICALLY FITTING INSULATING CAPS ON CONNECTING CLIPS

Attilio Frisiani, Champareillan, France, assignor to Etablissements Proner, Montreuil, France

Filed Apr. 20, 1972, Ser. No. 245,716
Claims priority, application France, Apr. 21, 1971, 7114096
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D 5 Claims

A machine adapted to fit caps or sheaths on electric connecting clips wherein a carriage fed with caps or sheaths and a forked member reciprocate along a common path, while a casing constituted by superposed jaws receives the clips between its jaws. The jaws being first opened and then closed over a clip, the forked member holds said clip fast against longitu-

dinal movement to allow the carriage to move forwardly and to fit the cap carried by it over the clip. This being done, the



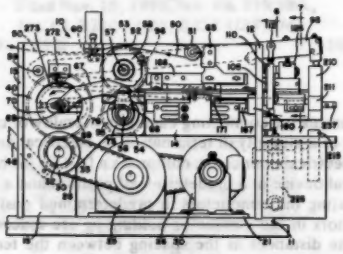
different parts separate and release the capped strip which is conveyed out of the machine.

3,758,937

APPARATUS FOR INSERTING INSULATORS IN ARMATURES

Kenneth A. Ott, 5236 Subra Ave., Dayton, Ohio

Filed July 28, 1972, Ser. No. 276,250
Int. Cl. H02k *15/10*
U.S. Cl. 29—205 E **8 Claims**



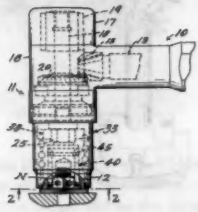
Apparatus for inserting cell insulating paper into armatures to be wound or for inserting coil stays or wedges in wound armatures includes forming rolls for partially forming a paper supplied from a continuous roll and means for intermittently advancing the paper through predetermined incremental lengths where blade is then cut. Cell insulating paper is then tamped into a forming die which forms the paper into a configuration corresponding generally to the shape of slidingly armature cell to be insulated. The knife is mounted on a second degree lever and the tamping blade is mounted on a third degree lever and both of these levers are actuated by a main operating arm so that after the paper is cut by the knife, the paper is immediately tamped into the forming means and continued movement of the knife will not bend or distort the end of the paper. A jam safety switch senses excessive resistance of the paper as it is moved from the forming die into the armature cell to cause a brake to be applied to immediately stop the operation of the device to prevent damage. A simplified loading mechanism includes an inclined pair of tracks and a loading chuck which picks up the armatures from the track and carries them to a position where they are loaded with insulating paper or coil stays and then returns the armatures to the same track. A stop located on the track slightly upstream of the axis of the loading chuck holds the armatures in position ready for loading and strips the armatures from the loading chuck after they have been loaded.

3,758,938

TOOL FOR APPLYING AND LOCKING THREADED FASTENERS AND METHOD

Roger Cleary Simmons, Shaker Heights; Horace Edward Boyd, Euclid, and Peter Mathis Kuchling, Cleveland Heights, all of Ohio, assignors to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 3, 1971, Ser. No. 195,164
Int. Cl. B23p *17/00, 19/00, 11/00*
U.S. Cl. 29—400 **15 Claims**



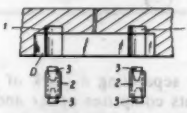
A power driven tool and method for turning a conventional threaded fastener on a threaded shank to a predetermined tightness and automatically locking it in place by deforming or swaging the fastener to create controlled thread interference. The tool includes a power driven fastener socket surrounded by a plurality of radially movable punches which, when moved inwardly, will deform the fastener to effectively lock it in place. The punches are caused to move inwardly upon the fastener by a mechanism for converting rotary motion of the tool to a radial clamping force which is applied to the fastener as it begins to be tightened and which is effective to deform the fastener after it has reached a predetermined tightness. The tool also includes means to automatically retract the punches from the fastener after the fastener has been deformed to permit removal of the tool.

3,758,939

METHOD FOR REPAIRING CRACKS IN INGOT MOLDS, PLATES AND SIMILAR CAST IRON ELEMENTS FOR USE IN IRON OR STEEL CASTING

Giovanni Galvani, Via Ettore Bellani, 2, Milan, Italy (20124)

Filed Oct. 15, 1971, Ser. No. 189,523
Int. Cl. B22d *19/10*
U.S. Cl. 29—402 **4 Claims**

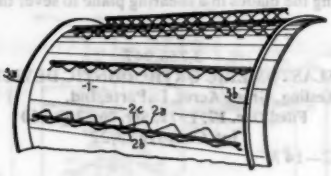


Straddling the crack a metal plate is placed and fastened to the ingot mold or the like by pins, which are fastened to the ingot mold or the like by welding and by permanent deformation.

3,758,940
METHOD OF PRODUCING COMPOSITE CONCRETE - STEEL PIPES AND JOINTS AND PIPE AND JOINT OBTAINED BY MEANS OF SAID METHOD

Jacques Edouard Jean Lamy, Fontenay-Aux-Roses, France, assignor to Societe D'Etude du Transport et de La Valorisation Des Gaz Naturels du Sahara "S.E.G.A.N.S.", Paris (Seine), France

Filed Nov. 23, 1964, Ser. No. 415,561
Claims priority, application France, Nov. 25, 1963, 63954915
Int. Cl. B23k *31/02*; B28b *17/00*
U.S. Cl. 29—460 6 Claims

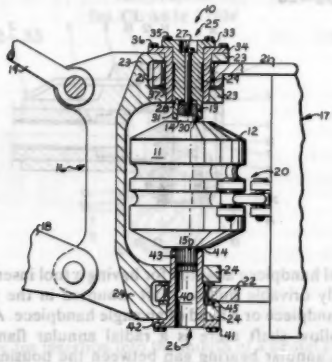


1. Method of producing a composite concrete-steel pipe comprising the steps of taking a thin mild steel sleeve to serve as the inner wall of the pipe, attaching metal reinforcing means to the outer face of said sleeve, forming an injecting mould about said sleeve by placing means acting as a moisture-permeable enclosure around said sleeve, said enclosure constituting the outer wall of said mould and said sleeve constituting the inner wall of said mould, injecting colloidal concrete into said mould, compressing the concrete before it has set by creating an internal hydraulic pressure in said sleeve so as to expand said sleeve beyond the elastic limit of said mild steel, releasing said hydraulic pressure in said sleeve after hardening of the concrete, and removing the resulting composite concrete-steel pipe comprising said concrete, said reinforcing means and said mild steel sleeve expanded against said concrete.

3,758,941
SWING MOTOR MOUNTING ARRANGEMENT AND METHOD OF DISASSEMBLY

James S. Jackson, Peoria, Ill., and Paul S. Lempio, Sausalito, Calif., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 3, 1972, Ser. No. 231,705
Int. Cl. B23q *3/00*
U.S. Cl. 29—464 30 Claims

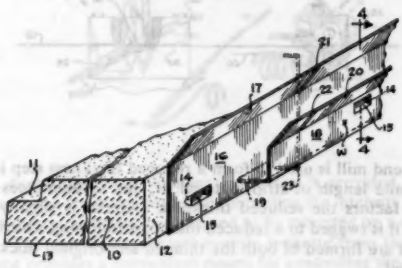


A swing motor has a shaft rotatably mounted in a housing thereof with the shaft projecting beyond each end of the housing. A support bracket and a frame are positioned on opposite sides of the motor and have a pair of overlapping bracket arms, positioned at each end of the motor, pivotally mounted together. A pin projects through each pair of bracket arms and is secured to one of the bracket arms and to a respective end of the shaft.

3,758,942
METHOD OF MANUFACTURING REFRACTORY BOTTOM RINGS

Ervin A. Marcec, 4800 Chicago Beach Dr., Chicago, Ill.

Continuation-in-part of Ser. No. 64,162, Aug. 17, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,719
Int. Cl. B22d *7/10*
U.S. Cl. 29—475 7 Claims

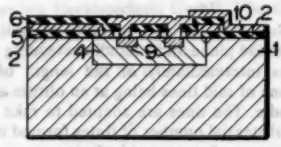


The invention provides dual wiper elements attached securely to refractory bottom rings for suspension from hot tops to be lowered into ingot molds prior to pouring hot metal thereinto, and a method of preassembling such wiper elements to said refractory bottom ring.

3,758,943
METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Keizo Shibata, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Division of Ser. No. 878,002, Nov. 19, 1969, abandoned. This application Nov. 18, 1971, Ser. No. 200,155
Claims priority, application Japan, Nov. 22, 1968, 43/85199
Int. Cl. B01j *17/00*
U.S. Cl. 29—578 4 Claims



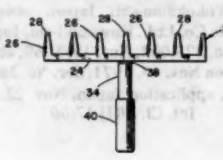
A method for manufacturing a semiconductor device comprises forming a first region of one conductivity type in a substrate of an opposite conductivity type through a main surface of the substrate, depositing a first metal electrode layer on the first region and depositing an insulation film on the first electrode layer. The insulation film is etched over the first region with a plurality of relatively minute holes to expose the first metal electrode layer through the holes and the first metal electrode layer is etched with a plurality of holes to expose the first region through said holes, the holes in the first metal electrode layer being etched such that the holes of the first metal electrode layer are larger than that of the insulation film. A second region is formed in the first region through the holes of the first metal electrode layer and insulation film. The second region is of opposite conductivity to the first region. A second

metal electrode layer is formed on the insulation film so as to electrically connected to each exposed section of the second region through the holes of the first metal electrode layer and insulation film.

3,758,944
TERMINAL METHOD AND MANUFACTURE
Quentin Berg, New Cumberland, Pa., assignor to E. I. du Pont De Nemours and Company, Wilmington, Del.
Division of Ser. No. 100,252, Dec. 21, 1970, Pat. No. 3,707,933. This application Jan. 24, 1972, Ser. No. 220,307
Int. Cl. H01r 9/00
U.S. Cl. 29—630 11 Claims

An end mill is used to form a reduced thickness step in an indefinite length of strip material. If, due to tolerances and other factors the reduced thickness material is slightly too thick, it is swaged to a reduced thickness following which terminals are formed of both the thinned and original thickness material.

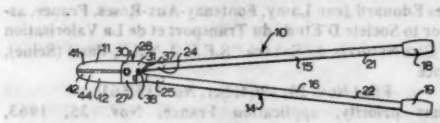
3,758,945
MASONRY FLUTE RAKE
Joseph F. Finnegan, Jr., York, Pa., assignor to York Stone & Supply Company, York, Pa.
Filed Jan. 7, 1972, Ser. No. 216,021
Int. Cl. E01c 23/02
U.S. Cl. 30—172 2 Claims



A masonry flute rake having a plurality of similar tines arranged in a common plane and a handle extending rearwardly from said tines intermediately of the length of said row thereof, the plane of said tines being at an obtuse angle to the axis of the handle. The tines are adapted to rake simultaneously down a substantial number of flutes formed in the outer faces of certain types of masonry blocks to remove projecting mortar from the courses between horizontal rows of such blocks.

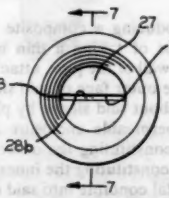
3,758,946
APPARATUS FOR REMOVING OVERLAPPED SIDING MATERIALS
William C. Peterson, 3828 S. Grand, Spokane, Wash.
Filed Dec. 30, 1971, Ser. No. 213,955
Int. Cl. B26b 13/04
U.S. Cl. 30—257 5 Claims

A tool is described having thin, flexible, high-speed tool steel blades that are detachably mounted to a tool head. The blades may be manually manipulated by handle elements to pivot the blades in a shearing motion. The blades are sufficiently flexible to be unable to shear a nail under normal conditions. The tool is used to remove overlapped siding by inserting the thin flexible blades between the siding elements with



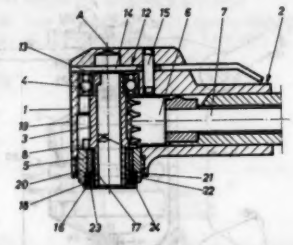
the siding elements preventing the blades from twisting and maintaining the blades in a shearing plane to sever the nail.

3,758,947
ELASTOMERIC ORTHODONTIC DEVICE
Peter C. Kesling, Green Acres, LaPorte, Ind.
Filed Dec. 17, 1971, Ser. No. 209,260
Int. Cl. A61c 13/22
U.S. Cl. 32—14 A 7 Claims



A device for producing elastic forces including traction forces in orthodontic treatment including an annular elastomeric body having a uniform cross section defined by radially inward and outward facing sides, wherein the radially inward facing side includes a pair of annular beveled faces converging radially inward to a line edge.

3,758,948
STRAIGHT OR ANGLE DENTAL HANDPIECE
Erich Bareth, Ummendorf, Germany, assignor to Kaltenbach & Voight, Biberach/Riss Bismarckring, Germany
Filed Mar. 17, 1972, Ser. No. 235,521
Claims priority, application Germany, Apr. 2, 1971, P 21 16 182.0
Int. Cl. A61c 19/02
U.S. Cl. 32—26 12 Claims



A dental handpiece adapted for having a tool inserted into a rotationally drivable hollow shaft mounted in the nose of a straight handpiece or a head of an angle handpiece. At the end of the hollow shaft there is a radial annular flange which covers an annular bearing gap between the housing and the shaft at the end from which the tool projects. The annular flange abuts against a sealing ring which bears against the housing, and the sealing ring is completely covered by the an-

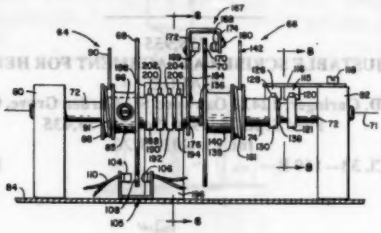
nular flange. Between the sealing ring and the housing there is mounted a compression spring acting in the axial direction of the shaft.

3,758,949

DIGITIZER

Charles A. Fausel, Chicago, Ill., and Allan A. Lorenz, Willowick, Ohio, assignors to Teletype Corporation, Skokie, Ill.

Filed Jan. 6, 1971, Ser. No. 104,381
Int. Cl. G09b 29/10
U.S. Cl. 33—1 M 12 Claims



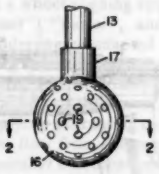
Digital readout data of coordinates of points in a two dimensional system is generated in a pair of counters in response to the angular positions of the following: (1) a first disc rotatable in response to movement of a first slider in a straight path to a selected position, and (2) a second disc rotatable in response to movement of the first slider and in response to movement of a second slider in a straight path to a selected position. The second slider is carried from the first slider and arranged for movement therewith and normally thereto independently thereof. Effect on readout due to movement of the second slider resulting from the movement of the first slider is prevented because the discs are mounted for rotation simultaneously upon movement of the first slider. A sensing assembly adapted for detecting the relative angular displacement of the second disc and actuating an associated counter is carried with said first disc for rotation relative to the second disc.

3,758,950

DENTAL EJECTOR EQUIPMENT

Kersam K. Krouzian, 1290 Chestnut St., San Francisco, Calif.

Continuation-in-part of Ser. No. 586,456, Oct. 13, 1966, abandoned, and a continuation-in-part of Ser. No. 797,427, Feb. 7, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 174,788
Int. Cl. A61c 17/04
U.S. Cl. 32—33 2 Claims



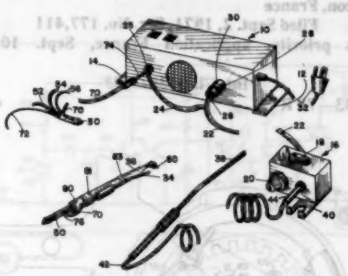
A device for insertion into the mouth of a dental patient for removing saliva and particles. An inner hollow member has an outlet connected to a suction tube. The member is covered by a layer of soft resilient synthetic material which is porous and which is provided with spaced openings therethrough to pass solid particles.

3,758,951

DENTAL FIBER OPTIC ILLUMINATION SYSTEM

Leonard Scrivo, Bronxville, N.Y.; Lionel J. La Plante, S. Bridge, Mass.; Vincent A. Chumenti, Bronx, N.Y., and Gotthard George Rubin, Garfield, N.J., assignors to Vicon Products Corp., Mamaroneck, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,350
Int. Cl. A61c 1/10
U.S. Cl. 32—27 12 Claims



A dental fiber optic illumination system is provided which comprises a control module for controlling the intensity of the light source, and which is adapted to be mounted on a dental tray. The use of the control module separate from the light source provides a convenient means for controlling the intensity of the light source and one which utilizes a minumim portion of the dentist's working area. There is further provided a dental handpiece hose which receives a fiber optic assembly connected to the light source. The dental handpiece hose comprises the usual conduits and a further conduit disposed between conduits for receiving a fiber optic assembly. One of the walls defining the further conduit may be made up of a pair of elongated interlocking members which permit the wall to be partially or completely opened for ready access to the further conduit.

ERRATUM

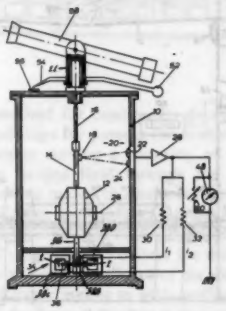
For Class 33—1 see:
Patent No. 3,758,949

3,758,952

MERIDIAN GYROSCOPIC INSTRUMENT

Eduard Fischel, Uberlingen/Bodensee, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen/Bodensee, Germany

Filed Feb. 22, 1971, Ser. No. 117,813
Int. Cl. G01c 19/38
U.S. Cl. 33—324 5 Claims



The damping device for a meridian gyroscope includes a torque motor between the gyro rotor housing and the frame

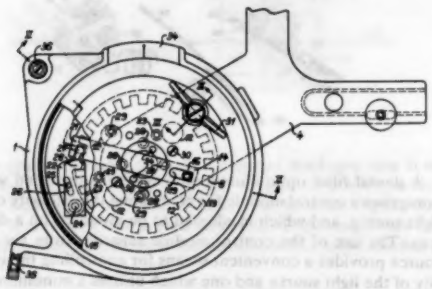
from which the gyro is suspended by a tape. The torque motor is supplied with electric signals derived by a pickoff between the gyro rotor housing and the frame and applies a torque to the gyro rotor housing about an axis that is perpendicular to a plane which includes the tape and the gyro spin axis.

3,758,953

DRAWING-BOARD PROTRACTOR UNIT

Alain Bruneau, Besancon, France, assignor to Societe ALPIA, Besancon, France

Filed Sept. 2, 1971, Ser. No. 177,411
Claims priority, application France, Sept. 10, 1970, 7032925
Int. Cl. B43l *13/08*
U.S. Cl. 33—79 R **4 Claims**



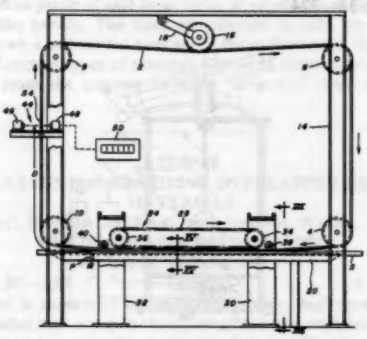
The protractor unit according to this invention is characterized in that the support consists of a single piece and is provided with a least one toothed wheel axially open and formed integrally with the support, an annular peripheral cavity being also formed about said toothed wheel for receiving means for mutually detent-positioning a pair of teeth, said wheel being further provided with means for positioning a disk intended for locking said two movable portions in relation to the support, as a consequence of the bearing engagement of a shoe on said disk.

3,758,954

APPARATUS FOR MEASURING LENGTHS OF LINEAR MATERIAL

Alfred Teplitz, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 23, 1971, Ser. No. 136,806
Int. Cl. G01b *3/12, 5/04, 7/04*
U.S. Cl. 33—141 F **13 Claims**



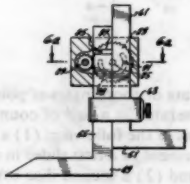
Apparatus and method include the use of an endless loop of accurately calibrated tape trained around a plurality of pulleys with means for maintaining contact between the tape and moving linear material to be measured. A leg of the endless loop is arranged to parallel the moving linear material in close proximity thereto. A ribbon of magnets or other clamping means mounted on an endless chain is positioned parallel to the aforementioned leg of the tape. The magnets releasably clamp the leg of the tape to the moving linear material, causing the leg (and thus the loop) of the tape to move exactly as the linear material moves. By counting the number of times the loop of tape has circulated (and adding to this number any fractional part of a length of loop that has passed), the exact length of linear material that has passed a fixed point can be determined.

3,758,955

ADJUSTABLE SCRIBER ATTACHMENT FOR HEIGHT GAUGE

Jesse D. Garinger, 12421 Oakwood St., Garden Grove, Calif.

Filed Sept. 25, 1970, Ser. No. 75,435
Int. Cl. G01b *3/20*
U.S. Cl. 33—169 R **1 Claim**



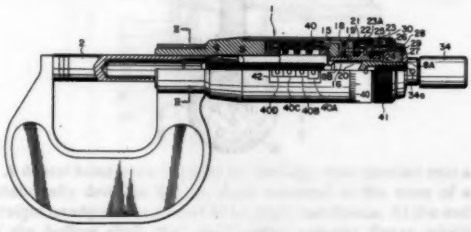
The attachment is comprised of two L-shaped members held together slideably, one having an arm extending in a first direction and adapted to be clamped to the measuring blade of a height gauge and the other L-shaped member having an arm parallel to the first arm, extending in a direction opposite thereto, and carrying a scribing edge at its end. By thus providing a scriber edge which is slideable relative to the height gauge the operation of any height gauge with which the attachment is used can be simplified and accelerated. A gear-driven eccentric pin and slot arrangement serves for manual relative adjustment of the L-shaped members.

3,758,956

MICROMETER COMPRISING A DIGITAL COUNTER

Kiyohiro Nakata, Kure, Japan, assignor to Yehan Numata, Yokohama City, Japan

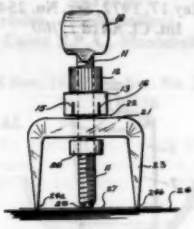
Filed May 1, 1972, Ser. No. 249,277
Claims priority, application Japan, May 11, 1971, 46/37649
Int. Cl. G01b *3/18*
U.S. Cl. 33—166 **2 Claims**



Micrometer comprises a spindle which is axially advanced by rotating a knob or ring and a digital indicating counter actuated in response to movement of said spindle and seated in the guide for said spindle. The micrometer comprises means

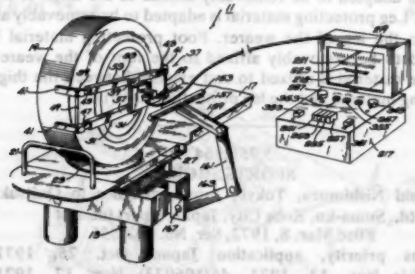
for adjusting the counter and means for taking up any play between the spindle and spindle guide.

3,758,957
WET FILM THICKNESS GUAGE
Luther Eskijian, 2223 Midlothian Dr., Altadena, Calif.
Filed Apr. 6, 1972, Ser. No. 241,502
Int. Cl. G01b *3/28*
U.S. Cl. 33—169 F **1 Claim**



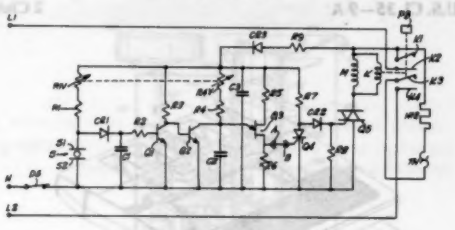
An instrument having adjustment provision in the form of a threaded shank portion used to feel the Wet Film surface, and which moves to a selective degree outward or inward relative to a pair of astriding penetration forks, including a rotational gauge member calibrated to record said Wet Film thickness.

3,758,958
WHEEL ALIGNING APPARATUS
William I. Jordan, Belgium, Wis., assignor to Performance Equipment Inc., Milwaukee, Wis.
Filed Apr. 28, 1970, Ser. No. 32,508
Int. Cl. G01b *5/24*
U.S. Cl. 33—336 **22 Claims**



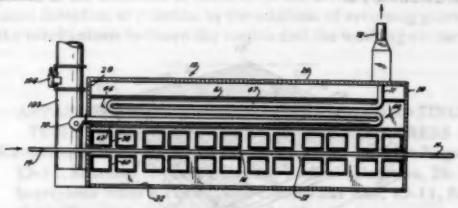
Disclosed herein is a wheel aligning apparatus for selectively measuring "camber", "caster", and "toe" conditions, which apparatus includes means adapted to be connected to a wheel and a measuring circuit including a sensor mounted on said means and including means variably passing current in accordance with the position of the sensor. The circuit also includes means for supplying alternating current thereto, means for measuring current flow from the sensor, camber, caster, and toe resistors in parallel electrical connection, and switch means connected to said camber, caster, and toe resistors for selectively connecting any one of the resistors in operative electrical connection in the circuit and for simultaneously disconnecting the other two of said resistors from the circuit. The aligning apparatus also includes a mounting arm supporting the sensor and means connecting the mounting arm to a tire clamp for affording pivotal movement of the mounting arm relative to the tire clamp about an axis transverse to the wheel axis.

3,758,959
DRYER CONTROL SYSTEM USING MOISTURE SENSOR AND SEMICONDUCTORS TO CONTROL CYCLE
Joseph Karklys, Saint Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 12, 1971, Ser. No. 198,198
Int. Cl. F26b *19/00*; G05b *11/00*
U.S. Cl. 34—45 **15 Claims**



A dryer control system for sensing the moisture content of clothes which bridge a pair of spaced apart sensing electrodes in a dryer employs means for adjusting the desired moisture retention, means for adjusting the moisture sensitivity of the circuit and the duration of a drying time period at the end of the dryer cycle, and means for rendering the system circuit insensitive to false indications caused by static charges applied across the moisture sensing electrodes. The system circuit is employed to directly control turn-off of the drive motor and heating means of a dryer and includes a further means for delaying for selected intervals termination of the drying cycle upon detection of the desired moisture retention condition.

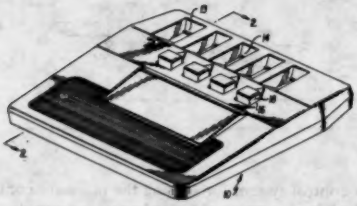
3,758,960
APPARATUS FOR DRYING MATERIALS
David McCreary, Latham; John McCreary, Newtonville, and Harvey Anderson, Elnora, all of N.Y., assignors to McCreary Machine Works, Cohoes, N.Y.
Filed Apr. 21, 1971, Ser. No. 136,797
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 **8 Claims**



Apparatus and method for continuous drying of materials including means and steps for passing the material to be dried into a drying chamber having a plurality of drying zones; uniformly directing heated fluid through the drying zones, each drying zone having means to direct the heated fluid substantially uniformly over the surfaces of the material to be dried; and having discharge fluid collecting means in communication with the drying zones to collect the discharged fluid, and means for moving substantially all of the discharged fluid through a heat exchanger means so as to uniformly heat substantially all of the discharged fluid to a desired temperature and means to conduct the uniformly heated fluid to the distributing means and temperature control means to maintain the fluid temperature in the drying chamber and then passing

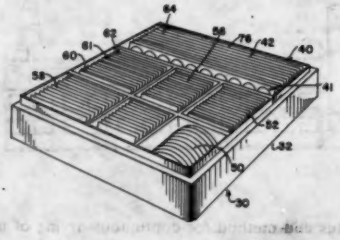
fluid through the distributing means whereby the uniformly heated fluid is conducted through the drying zones to continuously dry the material uniformly.

3,758,961
EDUCATIONAL DEVICE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan
Filed Apr. 25, 1972, Ser. No. 247,475
Int. Cl. G09b 3/06
U.S. Cl. 35—9 A 2 Claims



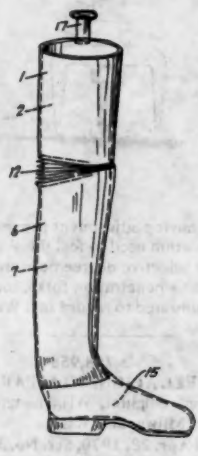
An educational device featuring a housing provided with a slot within which a plurality of cards containing problems and multiple choice answers thereto are inserted, the housing being further provided with a plurality of buttons operatively connected to a plurality of fingers normally extending within the slot, the cards each being further provided with coded cut-out portions adjacent the correct answers, the fingers normally extending through the coded cut-out portions preventing the card from moving while actuation of the correct buttons withdraws the fingers from the coded cut-out portions permitting the card to move outwardly within the slot under the influence of a spring biasing mechanism to the next problem to be solved, after which the sequence is repeated.

3,758,962
ARITHMETIC TEACHING AID KIT
Florica Bagdasar, 5901 N. Sheridan Rd., Apt. 13A, Chicago, Ill.
Filed July 19, 1971, Ser. No. 163,942
Int. Cl. G09b 19/02
U.S. Cl. 35—31 R 1 Claim



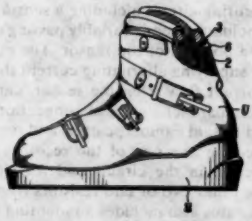
The invention relates to a teaching aid kit for beginning arithmetic students. A preferred embodiment is disclosed which includes a container with compartments and a number of groups of instructional materials. In the disclosed preferred embodiment, the kit includes a container and at least three main kinds of materials: (a) discrete compact pieces from which the student can assemble and manipulate concrete representations of mathematical sets, (b) printed pieces showing indicia having predetermined sets and which the student uses to identify sub-sets, and (c) a series of printed pieces, each respective piece having a larger set shown thereon than the preceding member of the series, and which the student can use to identify, manipulate, and arrange in increasing or decreasing value. The pieces of the first group have a shape, e.g. a colored circle, which is repeated in the representation of the sets shown on the other printed material in the kit.

3,758,963
SNAKE BITE PREVENTING DEVICE
Rex Knight, Garland, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed May 17, 1972, Ser. No. 254,263
Int. Cl. A41d 17/00
U.S. Cl. 36—2 R 7 Claims



A snake bite preventing device comprises thigh protecting material adapted to be removably affixed to the thigh of the wearer. Leg protecting material is adapted to be removably affixed to the leg of the wearer. Foot protecting material is adapted to be removably affixed to the foot of the wearer. Flexible material is affixed to and extends between the thigh proteting material and the leg protecting material.

3,758,964
SPORTS SHOE
Kazuyoshi Nishimura, Tokyo, Japan, assignor to Onitsuka Co. Ltd., Suma-ku, Kobe City, Japan, a part interest
Filed Mar. 8, 1972, Ser. No. 232,856
Claims priority, application Japan, Oct. 25, 1971, 46/84521; Nov. 13, 1971, 46/106033; Nov. 17, 1971, 46/107498
Int. Cl. A43b 19/00
U.S. Cl. 36—2.5 AL 7 Claims



The present invention relates to a sports shoe which comprises an enclosed bag member which consists of a heel cover

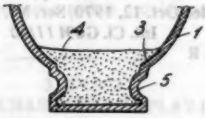
section for covering a heel portion of a wearer's foot and an instep cover section connected integrally with the heel cover section for covering an instep of the wearer's foot, said enclosed bag member having an air chamber formed therein; and a cushioning member which is made of cushioning material and adapted to cover the heel portion and both sides of the instep of the wearer's foot, said cushioning member being provided exteriorly of the air chamber of the enclosed bag member.

3,758,965

SKI BOOT

Giovanni Caberlotto, Montebelluna, Italy, assignor to Calzaturificio Caber S.P.A., Montebelluna (Prov. Treviso) Italy

Filed Nov. 16, 1972, Ser. No. 306,133
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **4 Claims**



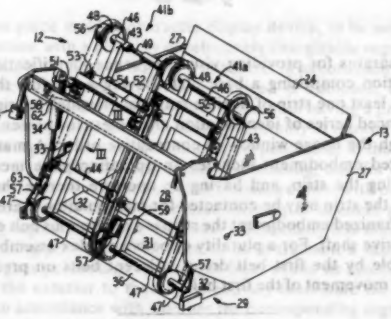
A ski boot comprising a rigid external body made of plastics material, in which said body is of almost uniform thickness. It comprises at the sole an internal longitudinal cavity provided externally with two longitudinal stiffening ribs, within said cavity there being disposed a wedge formed separately of a cellular plastics material.

3,758,966

MULTI-ELEVATOR SCRAPER

Lawrence J. Miller, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1971, Ser. No. 207,388
Int. Cl. B60p *1/36*
U.S. Cl. 37—8 **6 Claims**



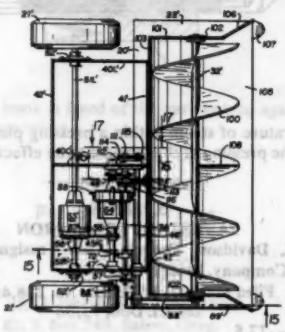
A tractor drawn earth moving scraper having a cutting edge for guiding earth into the open forward end of a bowl is provided with a pair of side-by-side powered elevators disposed above the cutting edge to forcibly assist the movement of earth into the bowl. The elevators are fastened to the bowl by linkage which provides for independent rising and falling of each elevator in response to the volume and resistance of earth beneath each individual elevator. This construction increases earth handling efficiency, reduces the stress on elevator flights and facilitates transportation of very large scrapers. One elevator may be driven from the scraper tractor engine while the other elevator is driven from the rear wheel engine to make more efficient use of available power.

3,758,967

YARD MAINTENANCE APPARATUS

David R. Thompson, Denver, Colo., assignor to Rental Equipment Manufacturing Co., Denver, Colo.

Continuation-in-part of Ser. No. 843,608, July 22, 1969, Pat. No. 3,579,702. This application May 14, 1971, Ser. No. 149,400. The portion of the term of this patent subsequent to May 25, 1988, has been disclaimed.
Int. Cl. E01h *5/09*
U.S. Cl. 37—43 E **15 Claims**



A self-propelled wheel mounted yard maintenance apparatus carrying an engine to drive the unit and a working element which may be a sweeper brush, a snowplow, a lawn mower or the like. The working element is direct-connected to the engine and is adapted to be rotated to function as the apparatus is moved across a yard. The apparatus includes a pair of drive wheels mounted upon a shaft to rotate to propel the unit. A differential is carried upon a driven shaft connected to the engine and a driving shaft connected to the drive wheel shaft. The differential is free to rotate upon these shafts and when rotating freely, it does not apply any driving torque to the driving shaft. A brake is provided to reduce the rate of rotation of this differential or to stop its rotation completely and in either case, the braking action will impart driving torque to the driving shaft. The driving shaft rotates in a direction opposite to the driven shaft when so restrained by the brake. The working element may rotate in a direction opposite to the direction of rotation of the drive wheels or in the same direction of rotation by the addition of reversing gears in the mechanisms between the engine and the working element.

3,758,968

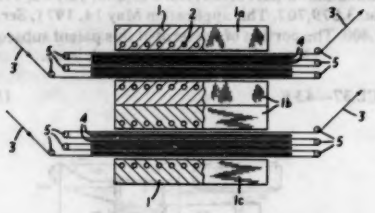
APPARATUS FOR CONTROLLING THE OPERATING TEMPERATURE OF A CONTINUOUS FLAT PRESS

Kazutomo Ishizawa, 6, Doshomachi 1-chome; Yasunor Nagata, 13-11, Senrioka Higashi 1-chome; Yoshiaki Uematsu, 28-10, Senriyama Nishi 6-chome, and Uunnosuke Abe, 13-11, Senrioka Higashi 1-chome, all of Osaka, Japan

Continuation-in-part of Ser. No. 887,230, Dec. 22, 1969, abandoned, Continuation-in-part of Ser. No. 175,371, Aug. 26, 1971, abandoned. This application Apr. 24, 1972, Ser. No. 247,044
Claims priority, application Japan, Dec. 29, 1968, 43/96480
Int. Cl. D06f *71/34*
U.S. Cl. 38—15 **19 Claims**

A method of pressing a fabric in a press at a given temperature. The temperature at which a fabric is pressed is set by developing a voltage corresponding to and representative of a desired or given temperature. A second voltage is developed and varied in response to a signal developed by sensing the press plate temperature and developing from the two first-mentioned voltage signals an integrated reference voltage signal that seeks to approximate the voltage representative of

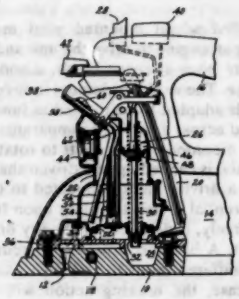
the desired temperature for pressing. This reference voltage is compared with another voltage developed by sensing the varying temperature of steam within a pressing plate of the press by which the pressing of the fabric is to be effected.



3,758,969
FAST START SPRAY IRON

William E. Davidson, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.

Filed Mar. 27, 1972, Ser. No. 238,456
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.5 6 Claims



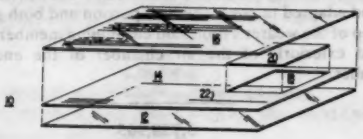
The invention discloses a steam and power spray iron wherein generated steam pressure is used to power the spray assembly. The invention is directed to an improvement in the spray assembly that provides a continuous steam tube directly connected at one end to the spray assembly and extending down into close proximity to the steam generator at the other end whereby, as soon as steam is generated, it is ducted directly and immediately to the spray assembly to provide steam power therefor without significant heat losses.

3,758,970
PHOTOGRAPH BEARING IDENTIFICATION CARD STRUCTURE AND METHOD OF MANUFACTURE

Maurice Annenberg, Pikesville, Md., assignor to Maran Plastic Company, Baltimore, Md.

Filed June 8, 1971, Ser. No. 150,987
Int. Cl. G09f *3/02*
U.S. Cl. 40—2.2 8 Claims

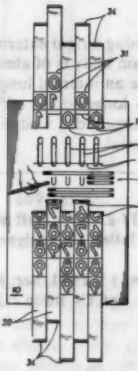
An identification or credit card structure is disclosed which includes a photographic likeness of an individual as well as printed information relating to the individual. The card is preferably comprised of three layers of plastic material with the printed information printed in reverse on the back side of the uppermost layer of plastic. The photographic likeness may be on conventional photographic paper or may be imprinted directly on a plastic panel. When imprinted on a plastic panel, the photograph is fused into the overall card structure upon lamination to form a tamper-proof, solid plastic card. Other techniques for rendering the card resistant to tampering are also disclosed, including the use of special printing techniques and special inks.



3,758,971
SEQUENCE IDENTIFICATION APPARATUS

Donald R. Tarrant, 3703 Woodvalley, Houston, Tex.

Filed Oct. 12, 1970, Ser. No. 80,032
Int. Cl. G09f *11/30*
U.S. Cl. 40—64 R 3 Claims



Apparatus for providing visual sequence identification information comprising a base plate having a window therein and at least one strip of flexible material on which is printed a sequenced series of identification characters for presentation through the image window in consecutive order. A manually operated embodiment includes an operating plate member, overlying the strip, and having an aperture therein through which the strip may be contacted for manipulation thereof. In a mechanized embodiment the strip is a continuous belt driven by a drive shaft. For a plurality of belts an index assembly engageable by the first belt drives adjacent belts on predetermined movement of the first belt.

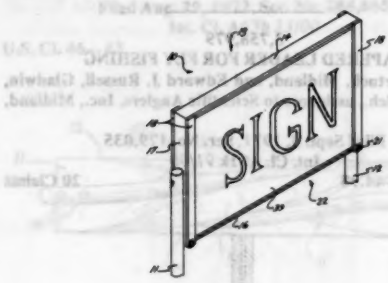
3,758,972
BILLBOARD

George W. Egermayer, 1417 Pine Rd., Omaha, Nebr.

Filed Aug. 9, 1971, Ser. No. 169,943
Int. Cl. G09f *01/12*
U.S. Cl. 40—125 K 2 Claims

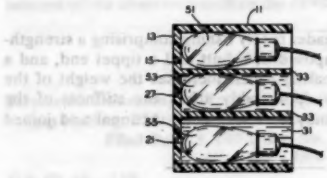
A billboard having a housing secured to a supporting structure, the housing removably receiving a sign panel comprising at least two nesting members which securely hold a sign therebetween. The sign is stretched across one of the members and its edges are tightly disposed between the members. Each member includes a plurality of struts each detachably connected in abutting relationship to its adjacent struts thus permitting the member to be readily disassembled for storage and

transport. One of the members has a plurality of electrically connected outlets mounted thereon which are adapted to be



connected to a power source thus providing lighting for the sign.

3,758,973
ONE PIECE CHARACTER DISPLAY DEVICE
Gary L. Miller, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Filed July 17, 1972, Ser. No. 272,246
Int. Cl. G09f *9/34*
U.S. Cl. 40—130 E 12 Claims



A one piece molded character display device, to be used in conjunction with a plurality of selectively energizable segment illuminators to thereby display a character in accordance with the selected illuminators when energized is disclosed, comprising a main housing of translucent material having a primary character display face and having a plurality of interior partitions integral with and substantially perpendicular to the face to form a plurality of cells within the housing, one for each segment illuminator. Each cell has associated therewith on the character display face a character forming or decimal point forming segment having a thickness substantially less than the surrounding portions of the face so as to transmit a substantially higher percentage of the light from within its associated cell to the exterior to thereby selectively illuminate the segments in accordance with whether the corresponding segment illuminator is energized or not.

3,758,974
GARMENT HANGERS
Albert E. Malmer, P.O. Box 153, Blue Island, Ill.
Filed May 25, 1972, Ser. No. 256,790
Int. Cl. F16m *13/00*
U.S. Cl. 40—322 5 Claims

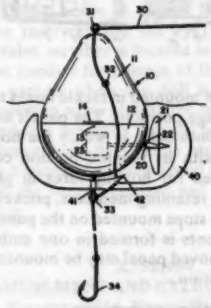
A garment hanger in the form of a plaque journaled at the sides in a wall bracket. The plaque has a hook at the top and a face on both sides with features expressing a frown. When the hook is drawn in forward direction to rotate the plaque and depend at the bottom to support a garment, the rear face of the plaque shows in front; and its inverted features express a smile. The plaque is journaled above center to make its lower portion heavier for rotating the plaque back to original posi-

tion, when the hook is freed of the garment, to again present the frowning expression.

ERRATUM

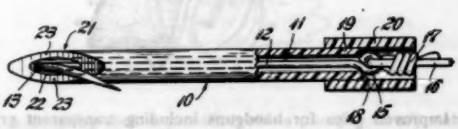
For Class 42—71 see:
Patent No. 3,758,978

3,758,975
SELF-PROPELLED BOBBER
George Curtis, Rt. 3, Box 749, Salem, Oreg.
Filed May 24, 1972, Ser. No. 256,549
Int. Cl. A01k *85/06*, *93/00*
U.S. Cl. 43—26.1 2 Claims



A self-propelled bobber for trolling a fishing line having a float, propulsion means for propelling the float, a steering rudder, and means for remotely setting the steering rudder at an angle to the direction of propulsion, thereby causing the bobber to troll in a circle.

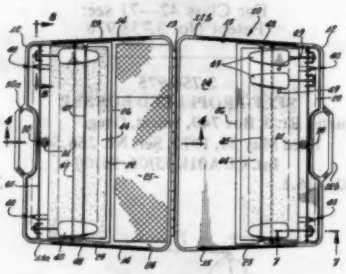
3,758,976
FISH HOOK AND LURE ASSEMBLY
Henry E. Szwolkon, 456 Hollister Ave., Bridgeport, Conn.
Filed Apr. 7, 1972, Ser. No. 241,948
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.24 1 Claim



There is disclosed a fish hook and lure assembly having a plastic tube through which the shank of the hook extends with

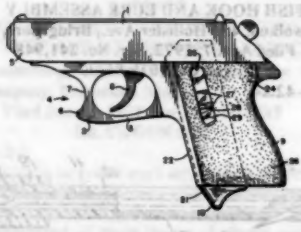
the barb end of the hook projecting through an oval opening at one end of the tube and the eye and leader knot lying in a cavity at the other end of the tube. The shank is movable in the tube to expose the eye for the reception of the end of the leader. The tube is resiliently yieldable to permit the leader and eye end of the hook to be inserted by placing the eye end in the oval opening and forcing the hook through the tube until the eye is located in said cavity. The cavity is formed by a sleeve attached at one end to said other end of the tube. The remainder of the sleeve has an internal dimeter greater than the diameter of the eye, while the tube has an internal diameter normally less than the eye diameter.

3,758,977
FISHING TACKLE BOX
Cecil V. Miller, 9243 La Rosa Dr., Temple City, Calif.
Filed Oct. 4, 1971, Ser. No. 186,088
Int. Cl. A01k *97/06*
U.S. Cl. 43—57.5 R **9 Claims**



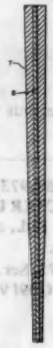
Removable panels are mounted in tackle boxes to be pivotable into and out of storage positions. The panels have recesses formed preferably on both sides in which the hook of a fish lure may be hooked with its pointed portion covered. Arrangements are included for holding lures in place on the panels including elastic retaining members, pockets formed in the panels, padding and stops mounted on the panels. An additional set of pivot mounts is formed in one embodiment of tackle box so that a removed panel may be mounted therein in a readily accessible position.

3,758,978
GRIPS FOR HANDGUNS
Paris Theodore, 24 E. 73rd St., New York, N.Y.
Filed Dec. 23, 1971, Ser. No. 211,530
Int. Cl. F41c *23/00, 25/06*
U.S. Cl. 42—71 P **4 Claims**



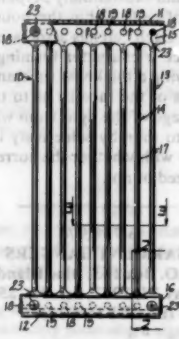
Improved grips for handguns including transparent grip plates to permit viewing of the remaining ammunition in a magazine-fed automatic pistol, a magazine grip extension angled backward from the main grip line and of reduced thickness to provide an efficient grip for the little finger, and a forefinger pocket formed on the front of the trigger guard to provide a secure grip for the forefinger of the free (left) hand thus improving control of recoil when a two-handed hold is used by the shooter for fast firing.

3,758,979
TAPERED LEADER FOR FLY FISHING
Leon L. Martuch, Midland, and Edward J. Russell, Gladwin, both of Mich., assignors to Scientific Anglers, Inc., Midland, Mich.
Filed Sept. 9, 1971, Ser. No. 179,035
Int. Cl. A01k *91/00*
U.S. Cl. 43—44.98 **20 Claims**



A novel tapered leader for fly fishing comprising a strength-supplying core, composed of a butt and a tippet end, and a weight-increasing coating which increases the weight of the leader but does not appreciably affect the stiffness of the leader. The leader may be knotless or sectional and joined together.

3,758,980
ELECTRICAL GRID
Walter Bialobrzeski, 92 Grove St., East Berlin, Conn.
Filed June 29, 1971, Ser. No. 157,845
Int. Cl. A01m *1/22*
U.S. Cl. 43—112 **3 Claims**



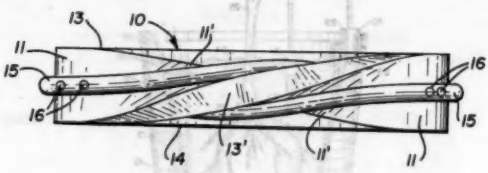
An electrical grid used as an insect electrocutor wherein two identical grid assemblies are mounted in essentially parallel, interdigitated relationship in two identical spaced apart insulating members.

3,758,981

MOBIUS BAND TYPE AMUSEMENT DEVICE

Richard S. Hlasnicek, Jamestown Star Rt., Boulder Heights, Colo., and Paula Towne, N. 6107 Monroe, Spokane, Wash.

Filed Aug. 29, 1972, Ser. No. 284,665
Int. Cl. A63h *33/00*
U.S. Cl. 46—43 5 Claims



A Mobius band type amusement device comprising an initially flat rectangular elongated strip of flexible material having its ends joined after giving it a half twist (180°) or an odd number of half twists. A length of tubing, preferably transparent, is mounted on or integrally formed with both side surfaces of the Mobius strip, with its ends joined to form an endless tube which contains a ball or plurality of balls for travel in the tubing in a path which is continuous without going around an edge. Preferably the strip and tubing are made of flexible plastic material, not necessarily the same material, and the ball or balls are steel. Movement of the balls in the tubing may produce an audible sound which adds to the interest of the observer handling the device.

3,758,982

ACTIVITY DOLL

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J., and William Nutting, 125 Beach 124 St., Rockaway Park, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,451
Int. Cl. A63h *13/04*
U.S. Cl. 46—119 18 Claims

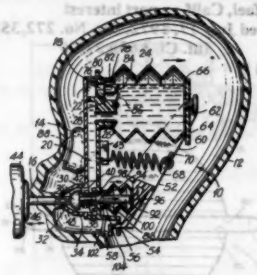
A doll is provided having a hollow body with one or more pivotally mounted limbs arranged for movement from a normally retracted position at the side or in front of the body to an actuated position at a higher location or across the body by operating a manual actuator such as a depressible member which is accessible to the rear of the body. In another embodiment, a mechanism subassembly is constructed for selectively operating an arm and leg of a doll. The arm or leg of the doll is frictionally adjustable on its pivot mount permitting selective adjustment of the path through which movement is effected so as to permit the simulation of various human activities. In another embodiment, the limb is bendable on its mount so as to permit the simulation of still further human activities when the limb is actuated.

3,758,983

DOLL WHICH TEARS ONLY IN HORIZONTAL POSITION

George Cagen, Brooklyn, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Dec. 22, 1971, Ser. No. 211,014
Int. Cl. A63h *3/24*
U.S. Cl. 46—135 A 18 Claims



A gravity influenced weeping device is provided for a doll having a head with eye sockets and an open mouth formed therein and is constructed to cause the doll to weep only when it is placed in a horizontal position. The device includes a liquid inlet conduit located adjacent the open mouth and a flexible reservoir in liquid communication with the inlet conduit; a selectively operable valve means is located in the inlet conduit to permit liquid to flow through the mouth to the reservoir when the valve is engaged with the nipple on the end of a liquid supply bottle. A second liquid conduit is formed between the reservoir and the eye sockets, and a gravity responsive valve member is located in the second conduit for opening that conduit for passage of liquid from the reservoir to the eye sockets when the doll is placed in a generally horizontal position while closing the second conduit when the doll is placed in a generally vertical position. Means are provided for compressing the flexible reservoir so that when the doll is in the horizontal position liquid is forced from the reservoir through the second conduit and valve means therein to the eye socket.

3,758,984

AMUSEMENT AND EXERCISE DEVICE

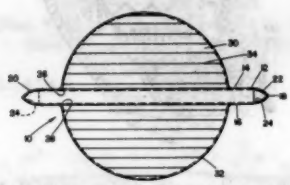
Brower C. Spransy, 4516 Rynex Dr., Alexandria, Va., and George Brower Spransy, 18 Dog Wood Acre, Chapel Hill, N.C.

Filed July 18, 1972, Ser. No. 272,881
Int. Cl. A63h *33/02*
U.S. Cl. 46—220 5 Claims

A handling stick is provided with a plurality of adjustably disposed pegs which are adapted to extend laterally therefrom and which carry retainer elements on their outer ends; and a plurality of ground-engaging hoops are adapted to be rotatably controlled by said pegs through manipulation of the

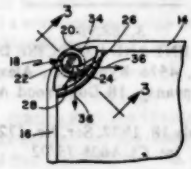
handling stick; the distance between the retainer elements carried by the pegs being spaced approximately twice the width of a single ground-engaging hoop and the adjacent surface of the handling stick.

3,758,985
DISCUS TOY
Alan W. Heisler, San Rafael, Calif., assignor to Melvin R. Stidham, San Rafael, Calif.; a part interest
Filed July 17, 1972, Ser. No. 272,358
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 D **3 Claims**



The disclosure is of a discus toy comprising a hollow disc on the sides of which are carried inflatable members, preferably of hemispherical configuration. Openings in the sides bring the interior of the disc into communication with the interiors of the inflatable members. Air scoops are provided on the periphery of the disc so that when the disc is thrown and spun, the inflatable members will expand into a sphere.

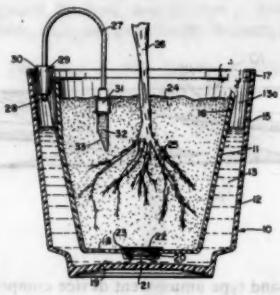
3,758,986
PLANTER POT SPRINKLER UNIT
James C. Roberts, 1860 Jeffrey, Escondido, Calif.
Filed Mar. 10, 1971, Ser. No. 122,671
Int. Cl. A01g *27/00*
U.S. Cl. 47—38 **9 Claims**



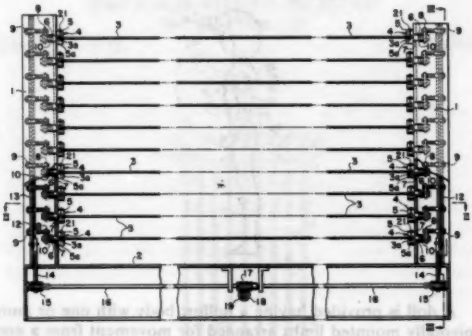
A sprinkler unit that is made integral with the side of a planter pot. The sprinkler unit has a plug that fits into a water supply hose and the plug has a restricted channel that directs the stream of water against a platform that is open on one side and has angled walls to direct the spray over the area of the pot.

3,758,987
AUTOMATIC PLANT WATERING DEVICE
William B. Crane, Jr., 340 E. 57th St., New York, N.Y.
Continuation of Ser. No. 161,270, July 9, 1971, abandoned.
This application July 5, 1972, Ser. No. 269,176
Int. Cl. A01g *27/00*
U.S. Cl. 47—38.1 **2 Claims**

An automatic plant watering device responsive to the plant's need for water is disclosed. The new watering device includes a porous sensing element that is inserted into the soil and responds to the moisture content of the soil to control the supply of water from a substantially airtight enclosure. The porous element consititutes an air valve. When the soil is relatively dry, air flows through the porous element, and water is released from the enclosure to the soil. When the soil is wet, air cannot pass through the sensing element and the flow of water is automatically shut off. The invention is also directed, in part, to a novel sensing and control device for incorporation in an automatic plant watering device or system. The device uses a basically new principle of operation and has no moving parts.



3,758,988
BLIND
Takeyoshi Tachikawa, Tokyo, Japan, assignor to Tachikawa Blind Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 3, 1972, Ser. No. 223,257
Claims priority, application Japan, June 2, 1971, 46/38420
Int. Cl. E05f *17/00*; **E06b** *7/084*
U.S. Cl. 49—85 **6 Claims**



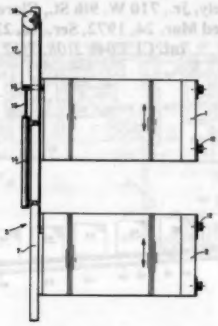
A blind comprising a number of thin blades arranged in parallel to one another, wherein said blades are respectively mounted at opposite ends thereof in a manner of being constantly stretched and are adjustably rotated about their axes altogether for a same angle, whereby the blades made of thin flat plates can be held straight and uncollapsed condition with no support in the way of the span of the blades.

3,758,989

LIFT DOOR

Jozef Johannes Theresia Rompa, 14, Bredaseweg, Terheyden, Netherlands

Filed Dec. 27, 1971, Ser. No. 212,068
Claims priority, application Netherlands, Dec. 29, 1970, 7018980
Int. Cl. E05c 7/06; E05f 17/00
U.S. Cl. 49—120 3 Claims



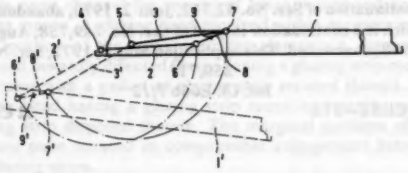
Lift door comprising an upper half and a lower half coupled for simultaneous, opposed, vertical sliding movement on one side only, the other side of said door halves being restrained in a direction normal to the door only.

3,758,990

DOOR ARRANGEMENT FOR VEHICLES

Constantin Balanos, Wolfsburg, Germany, assignor to Volkswagenwerk Akt., Wolfsburg, Germany

Filed Sept. 17, 1971, Ser. No. 181,332
Claims priority, application Germany, Feb. 6, 1971, P 21 05 659.7
Int. Cl. E05d 15/22
U.S. Cl. 49—153 2 Claims



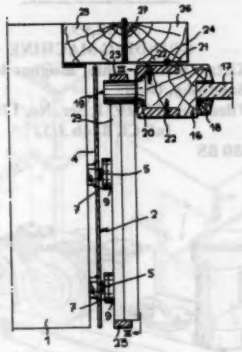
A door arrangement for a door opening of a vehicle wherein hinge means and guide means interconnecting the door with the body of the vehicle are provided, the hinge and guide means including hinge struts and guide struts secured at one end to the vehicle body, and a rod member interconnecting the other ends of the hinge and guide struts. Releasable means are also provided for securing one of said hinge struts and said rod members to the door so that the door may be moved to an open position about the one end of the hinge and guide struts obliquely with respect to the plane of the door opening. Alternatively, the door may be accordingly moved to an open position about the one end of the hinge and guide struts perpendicularly with respect to the plane of the door opening.

3,758,991

WINDOW WITH ROTATING MOVABLE FRAME

Jacques Alexandre, 45, Dreve des Gendarmes, Bruxelles, Belgium

Filed Nov. 17, 1971, Ser. No. 199,567
Claims priority, application Belgium, Nov. 17, 1970, 96,438
Int. Cl. E05d 15/58
U.S. Cl. 49—257 5 Claims



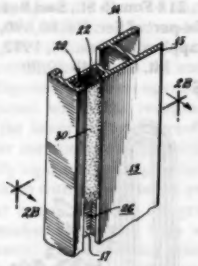
A pivoting window frame is provided having a mobile part provided with two coaxial pivots that slide transversally upon section steel pieces attached to a fixed part. The mobile part of the window can be moved between an extreme interior position, where it can be applied in a tight manner against the fixed part, and an opposite exterior position, in which it is sufficiently far away from the fixed part so as no longer to butt against the latter and so as to be able to pivot freely by at least one complete turn. The lateral posts of the fixed part present a retractable marginal element between a protruding position, in which it ensures the lateral tightness of the closed window, and a retracted position, in which it permits the free pivoting of the mobile part.

3,758,992

SEALED CLOSURES WITH WEATHER-STRIPPING

Harold G. Olson, Westport, Conn., assignor to H. G. Olson & Co., Inc., Amesbury, Mass.

Continuation-in-part of Ser. No. 44,977, June 10, 1970. This application Oct. 4, 1971, Ser. No. 186,237
Int. Cl. E06b 7/23
U.S. Cl. 49—489 6 Claims



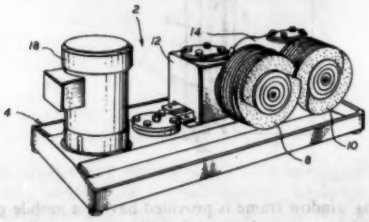
Weather-stripping especially for slidable closures such as windows, wherein the weather-stripping comprises a flexible plastic foam substrate provided on at least a part of its outer surface with a tough abrasion resistant skin. The weather-stripping is compressed into a confining channel in one closure member, and is provided with flocked fibers extending away therefrom to engage a second closure member to

prevent the infiltration of air and water. The substrate may preferably comprise ionomer plastic foam. The outer skin may be of the same material as is the cellular substrate or it may be a different material, e.g. laminated to at least one side of the cellular substrate to provide a smooth yet abrasion resistant surface. Specific cross-sectional shapes of weather-stripping are disclosed, together with manufacturing methods wherein the weather-stripping is shaped while in sheet form and then is slit into strips for insertion into the channel member.

3,758,993
GRINDING MACHINE

Douglas H. Kirtz, Oberlin, Ohio, assignor to Nicholas Equipment Co., Sandusky, Ohio

Filed Aug. 11, 1971, Ser. No. 170,749
Int. Cl. B24b *3/52*
U.S. Cl. 51—80 BS **11 Claims**

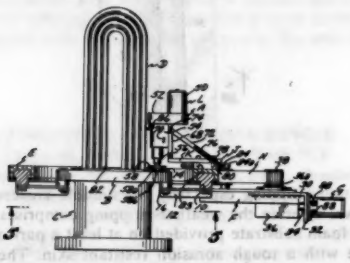


A grinding machine for honing the cutting edge of a cutting implement including a support member having a grinding assembly mounted on one side including a pair of interdigitated grinding wheels, and a drive mechanism supported on the opposite side being enclosed by the support member. Power means mounted in laterally spaced relation from the grinding assembly rotating the grinding wheels. At least one of the grinding wheels is mounted for adjustment with respect to the other grinding wheel. The drive mechanism includes an endless drive element for operating the grinding wheels in timed relation, and a speed-reducing mechanism connects the drive mechanism and grinding wheels for reducing the timing error resulting from adjustment thereof. Each grinding wheel includes a drive shaft journaled for rotation in the support member being arranged for driving connection with one side of the drive element for maximum power utilization and compactness.

3,758,994
PORTABLE POWER DRIVEN SURFACE FINISHING DEVICE

Lester L. Dillinger, 218 Fourth St., Seal Beach, Calif.

Continuation-in-part of Ser. No. 80,690, Oct. 14, 1970, abandoned. This application Feb. 24, 1972, Ser. No. 229,055
Int. Cl. B24b *19/00*
U.S. Cl. 51—241 S **15 Claims**



A portable power driven surface finishing device that is removably mountable on a vessel that occupies a fixed position in such a manner that a gasket engaging portion of a flange on said vessel may be machined even though the vessel has tubes or other obstructions projecting outwardly from the flange. The machining of the gasket-engaging surface or other surface portions of the flange adjacent thereto may include polishing, grinding, milling, routing and the like, as well as the drilling of circumferentially spaced bores in the flange at any desired angle relative thereto.

3,758,995
MOBILE THEATER-TYPE CLASSROOM

Ralph R. Connely, Jr., 710 W. 9th St., Claremore, Okla.

Filed Mar. 24, 1972, Ser. No. 237,771
Int. Cl. E04h *3/08, 1/12*
U.S. Cl. 52—8 **2 Claims**

A mobile theater-type classroom comprising an elongated and generally horizontally extending enclosure formed by a front vertical end wall, a rear vertical end wall, substantially vertical side walls spaced from each other and connecting at their side edges with the side edges of said end walls, a substantially horizontal roof extending across and connecting with the top edges of the side and end walls, and a floor member extending across and connecting with the bottom edges of the side and end walls, the floor member extending in a generally horizontal direction but having a major portion at least thereof inclined downwardly from a location near the front end of the enclosure towards and to a location near the rear end of said enclosure, the slope of said inclined portion being between 1½ inches and ¼ inch per foot.

3,758,996
MULTIPLE GLAZED UNIT

George H. Bowser, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 42,712, June 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 749,758, Aug. 2, 1968, abandoned. This application May 5, 1972, Ser. No. 250,717
Int. Cl. E06b *7/12*
U.S. Cl. 52—172 **22 Claims**

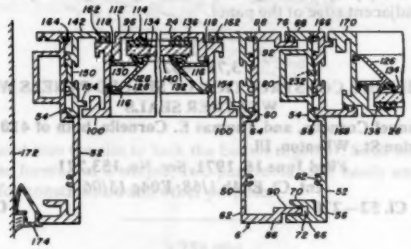
A hermetically sealed multiple glazed window unit containing an air space dehydrator element comprising a desiccant material dispersed in a matrix of moisture vapor transmittable material.

3,758,997

BUILDING WALL ASSEMBLY

Lawrence T. Vance, Pittsburgh, Pa., assignor to Engineered Products Inc. (EPI), Pittsburgh, Pa.

Division of Ser. No. 92,001, Nov. 23, 1970, Pat. No. 3,678,625.
This application May 11, 1972, Ser. No. 252,503
Int. Cl. E06b *1/16, 1/18*
U.S. Cl. 52—97 10 Claims



A building wall assembly including hollow mullions which are adapted to receive recessed framing elements to provide maximum exposure of panel surfaces including decorative panels and both fixed and movable window panels or panes. The mullions are so configurated as to be assembled from two mullion elements which permit relative longitudinal sliding movement between the mullion parts responsive to thermally induced expansion and contraction. Each mullion forming element has a generally Z-shaped web portion and flanges extending in the same direction from opposed ends thereof. Framing elements, which are to a major extent recessed within the exterior of the mullion walls, are secured thereto by fastening means. A fastener clip or glazing bead is received within the framing elements. Compressible gasket means are secured within the framing elements and the fastener clip in order to compressibly engage opposed marginal portions of a fixed panel to sealingly secure the same in position.

A ventilating window structure incorporating a form of the mullion and frame elements described above. The window having a movable frame member provided with a web-like body portion, outwardly directed flanges defining an outwardly open channel for receipt of hinge means and corner joining means. A glazing bead received within recesses in the body portion of the movable frame element. A rearwardly disposed inwardly directed flange having a glazing strip receiving recess with a gasket or glazing strip secured therein. The glazing bead having a glazing strip receiving opening and a glazing strip disposed therein. The marginal portions of the window pane secured in compressible engagement between the glazing strips.

A rotating window structure having a movable frame member, a mullion as described above and an inwardly open channel shaped fixed frame member. The movable frame member having a tubular body with an inwardly projecting flange and glazing bead receiving openings securing a glazing bead in position. Glazing strips received within the inwardly projecting flange and the glazing bead to secure the window pane to the movable frame.

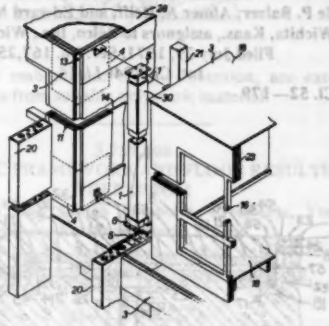
A compressible gasket or glazing strip element having an anchoring section, a compressible body portion and outer legs. The anchoring section having a resilient pilot section for assisting in introducing the gasket element into a recess. The body section is tubular and a rod-like connecting sector is interposed between the anchoring section and the tubular body section. Angularly rearwardly disposed resilient outer legs are connected with said tubular body section and project farther rearwardly than said tubular body section.

3,758,998

MULTI STOREY BUILDING

William John Bernard Ollis, Haddenham; Clive Beech Ansley Long, High Wycombe, and Ezra Levin, London, all of England, assignors to Timber Research and Development Association, Buckinghamshire, England

Filed June 17, 1970, Ser. No. 47,038
Claims priority, application Great Britain, June 20, 1969, 31253/69
Int. Cl. E04b *1/348*
U.S. Cl. 52—79 7 Claims



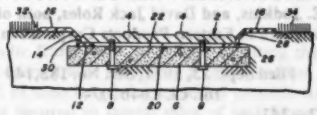
This invention is a method of building a housing block in which rigid boxes each in the form of a finished house with rooms and fittings, is lifted by a crane and the boxes are supported on vertical steel staunchions. The lower boxes do not carry the weight of higher boxes, and all the boxes give the vertical staunchion resistance against racking loads.

3,758,999

GRAVE MARKER PROTECTIVE STRUCTURE

Joseph J. Matvey, 208 Orin St., Pittsburgh, Pa.

Filed Aug. 4, 1972, Ser. No. 278,015
Int. Cl. E04h *13/00*
U.S. Cl. 52—103 14 Claims



A grave marker assembly having a marker protective structure including a generally horizontal base wall, a substantially continuous generally upwardly directed transition portion and an outwardly directed stabilizing ground engaging portion. The base wall and the transition portion cooperate to define a unitary marker receiving receptacle. At least a major portion of the receptacle disposed within an opening in the earth. The grave marker disposed within the receptacle and having at least a portion of the lower surface thereof in overlying contact with the upper surface of the protective structure base wall. A substantially rigid marker supporting base in underlying supporting position with respect to the protective structure base wall. Fastener means securing the grave marker to the underlying rigid marker supporting base with the base wall secured therebetween. The stabilizing ground engaging portion in overlying contact with the earth surrounding the receptacle.

The protective structure transition portion may preferably be in peripheral substantially continuous contact with the marginal edge of the grave marker. The ground engaging portion of the protective structure preferably has a transverse width of about 1.5 to 8 times the height of the transition portion. Drainage passageways may be provided through the transition portion to permit water within the receptacle to

flow outwardly and be discharged to a position underlying the ground engaging flange. The transition portion may have a number of inwardly projecting spacer elements which cooperate with the marginal edge of the grave marker and other portions of the transition wall to define a number of vertical passageways. A water permeable material may be provided exteriorly of the receptacle to facilitate drainage of water therefrom.

3,759,000

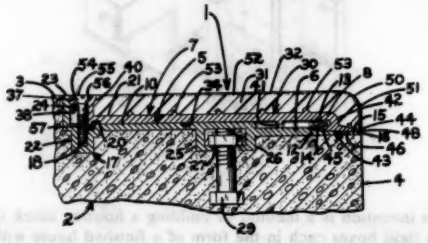
STAIR NOSING STRUCTURE

Claude P. Balzer; Almer A. Reiff, and Edward M. Corman, all of Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.

Filed July 29, 1971, Ser. No. 167,257

Int. Cl. E04f *1//16*

U.S. Cl. 52—179 **12 Claims**



A stair nosing structure for a stair step having a tread surface and a riser or forward facing surface includes an elongated base member and a removable cover strip member interlocked therewith in a co-acting rigid non-slip tread stair nosing forming a portion of the step tread surface. The base member is anchored to the step and the cover strip positioned with a forward edge portion thereof in registry with the riser or forward facing surface of the stair step.

3,759,001

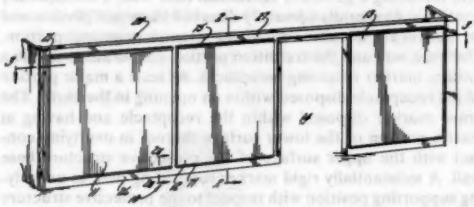
DEMOUNTABLE WALL CONSTRUCTION

Thomas E. Judkins, and David Jack Roles, both of Baltimore, Md., assignors to Eastern Products Corporation, Columbia, Md.

Filed Sept. 23, 1971, Ser. No. 183,149

Int. Cl. E04b *2/74*

U.S. Cl. 52—241 **7 Claims**



A modular wall construction for offices and the like employing widely spaced vertical studs with a wall panel extending between the studs and slightly overlapping them, the panel being secured to the studs by panel holders which extend along the respective lateral edges of the panel in the form of strips of zig-zag cross section, each panel holder having a forwardly projecting leg for enclosing the raw edge of the panel, a rearwardly projecting leg for positioning against the inside surface of the adjacent stud and a flat central portion which is sandwiched between the panel and the stud with means being provided on the studs for detented engagement of the rearwardly projecting leg to maintain the panel seated with respect to the front surface of the stud.

The studs are interconnected by upper and lower horizontal members of hollow rectangular cross section. The lower edge of the panel is supported upon a lower panel holder of channel shape and the upper edge of the panel is enclosed by a cap strip. Detented retention of the panel holders is accomplished by clips formed of spring metal which are secured to the inside surfaces of the studs, a single clip serving to retain panels on both sides of the studs. The raw lateral edges of the panel are held captive in the holders by sharp prongs struck out of the forwardly projecting leg and bent at right angles to penetrate the adjacent edge of the panel.

3,759,002

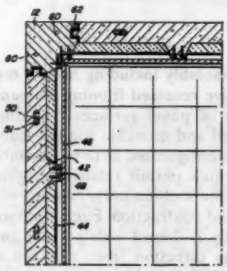
BUILDING CONSTRUCTION OF SPACED PANELS WITH WEATHER SEALS

Emanuel Cornella, and Thomas E. Cornella, both of 410 Williston St., Wheaton, Ill.

Filed June 16, 1971, Ser. No. 153,771

Int. Cl. E04b *1/68*; E04g *15/06*

U.S. Cl. 52—270 **1 Claim**



A compact, low cost building construction comprised of a poured concrete floor slab and foundation, a plurality of concrete corner columns extending upwardly from the floor with concrete walls extending between each corner column, and a row of insulated windows extending around the house between the top surfaces of the walls and a relatively flat roof structure to form a durable, long lasting housing structure. Each of the concrete corner columns has a pair of vertical channels or grooves, each of which receives a corresponding tongue portion of the abutting concrete side wall structure. Each side wall is poured after the corner columns have been completed with a steel spacer being inserted within each channel with a layer of tar paper, or similar material, wrapped around it; the spacer being removed after the concrete has set, thus providing an expansion type joint. The wall structures are provided with elongated insulation cells on the inside surface which are partially filled with fiber glass insulation and covered with a rigid panel or plasterboard to provide an attractive, yet durable and relatively inexpensive housing construction.

3,759,003

PINNED JOINT

John C. Wilson, 130 Homewood Ln., Rochester, N.Y.

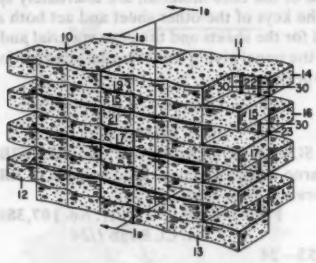
Continuation-in-part of Ser. No. 67,004, Aug. 26, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,340

Int. Cl. E04c *1//10*

U.S. Cl. 52—285 **65 Claims**

A pinned joint connects joinable edges of two bodies having complementary projections arranged so that the bodies can be moved together with the projections alternately overlapping in a common parting region between confronting surfaces of the projections. The confronting surfaces of the projections have recesses that are aligned when the bodies are fitted together to

form a slot extending along the common parting region transversely to the direction of fitting the bodies together, and a pin



is placed into the slot to lock the bodies together. Such bodies can be formed in a simple, two-part mold, and easily assembled for construction and other purposes.

3,759,004

GLAZING WINDOW OR WINDSCREEN OPENINGS, PARTICULARLY IN VEHICLE BODIES

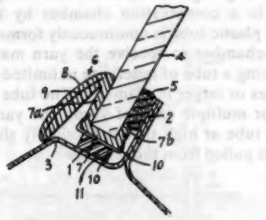
Cecil Kent, Woking, England, assignor to Creators Limited, Surrey, England

Continuation-in-part of Ser. No. 865,428, Oct. 10, 1969, Pat. No. 3,705,470, which is a continuation-in-part of Ser. No. 827,633, May 26, 1969, abandoned. This application Apr. 20, 1971, Ser. No. 135,574

Claims priority, application Great Britain, Apr. 23, 1970, 19644/70

Int. Cl. B60j *1/00*

U.S. Cl. 52—400 **13 Claims**



The invention relates to glazing window or windscreen openings, particularly in vehicle bodies by securing the glass, with a trim strip surrounding its edge, in the rebate of the opening by means of an adhesive pressed between the glass and/or the trim strip and the rebate. The trim strip is made of flexible plastics material with a channel portion which embraces the edge of the glass, and a front decorative strip portion which extends from and can hinge relative to the edge of the front wall of the channel portion which lies on the inside of the trim strip when it is fitted around the glass. The outer edge of the front portion bears against the rebate. By this construction the inside edge of the trim strip is kept against the glass, and any tendency to buckling is avoided.

3,759,005

PANEL EDGE AND SEAL STRUCTURE

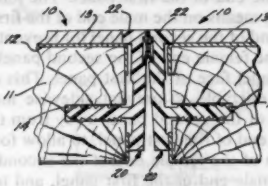
Irwin M. Smith, Grand Rapids, Mich., assignor to Walter Kidde & Company, Inc., Grand Rapids, Mich.

Filed Feb. 16, 1971, Ser. No. 115,632

Int. Cl. E04h *1/62*

U.S. Cl. 52—403 **5 Claims**

A panel edging and seal structure fabricated from a polymeric material including a trim portion of a relatively rigid polymer and a sealing portion of a relatively flexible polymer. The sealing and trim portions, in accordance with



the preferred embodiment of this invention, are extruded simultaneously from suitable polymeric material.

3,759,006

METALLIC FRAMEWORK AND FLOOR RESULTING THEREFROM

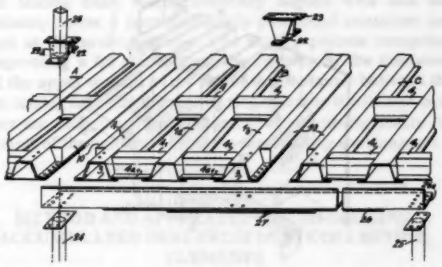
Maurice Paul Jean Joseph Tamboise, Crespieres, Yvelines, France, assignor to Entrepose, Paris, France

Filed Aug. 4, 1970, Ser. No. 60,849

Claims priority, application France, Aug. 12, 1969, 6927771

Int. Cl. E04b *2/20*

U.S. Cl. 52—406 **17 Claims**



The metallic frame-work and floor resulting therefrom is composed of lengthwise extending frame members closed on at least part of their length by an added metallic strip, cross-pieces being secured to lateral sides of said frame members and Z-shaped terminal flanges connected to outer sides thereof.

3,759,007

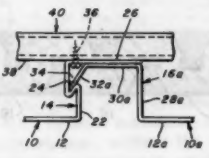
PANEL JOINT ASSEMBLY WITH DRAINAGE CAVITY

Robert E. Thiele, Murrysville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 14, 1971, Ser. No. 180,335

Int. Cl. E04c *2/52*

U.S. Cl. 52—533 **1 Claim**



A joint assembly between a first panel and an adjacent second panel is disclosed.

The first panel has a first exposed panel face and a female end on one end of the first panel. The female end of the first panel has a first end leg projecting inwardly from the end adjacent the female end of the first exposed panel face adjacent the female end of the first panel. The joint assembly has cooperating means on the male end of the first panel and on the female end of the second panel for preventing forward movement of the female end of the second panel toward the first exposed panel face of the first panel. This cooperating means is also operable to prevent sidewise movement of the female end of the second panel away from the first end leg of the male end of the first panel, to allow for expansion and contraction of the female end of the second panel with respect to the male end of the first panel, and to positively position the female end of the second panel with respect to the male end of the first panel.

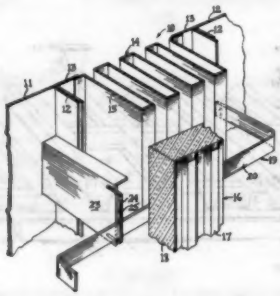
The joint assembly has in addition a frame, fastening means for connecting the male end of the first panel to the frame, and either the male end of the second panel or the female end of the first panel covers the fastening means.

3,759,008

INSULATED EXPANSION JOINT

Charles Husz, Chicago, Ill., assignor to Transco Inc., Chicago, Ill.

Filed June 28, 1971, Ser. No. 157,151
Int. Cl. F16l 27/12
U.S. Cl. 52—573 **2 Claims**



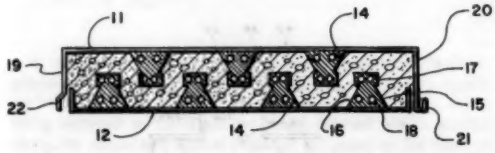
An expansion joint and support for a prefabricated metallically faced insulating panel used in the construction of duct work, with the joint comprising an expandable accordian-like or pleated metal plate providing a spaced support which extends beyond either side edge of the expandable plate, with the support being connected across the face of the plate for free vertical and horizontal movement relative thereto.

3,759,009

COMPOSITE LOAD BEARING PANELS

Frank F. Ransome, Livingston, N.J., assignor to Gordon T. Kinder, Martins Ferry, Ohio

Filed Jan. 28, 1971, Ser. No. 110,409
Int. Cl. E04b 5/04; E04c 2/26
U.S. Cl. 52—598 **7 Claims**



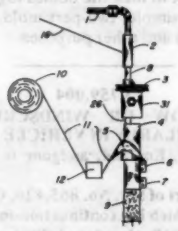
Composite, load bearing panels comprising two thin metal sheets, preferably mild steel, having a low density cementatious core material therebetween. Each metal sheet has a plurality of integral keys pressed angularly outward the refrom to extend into the cementatious core material. The keys of one sheet, which extend to a depth greater than 50 per cent of the thickness of the core material, are alternately spaced in relation to the keys of the other sheet and act both as a mechanical bond for the sheets and the core material and as reinforcement to the panel giving it substantial strength in both tension and compression.

3,759,010

SCREW JET PACK FOR TEXTILE FIBERS

Beryl Aaron Boggs, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,386
Int. Cl. B65b 1/24
U.S. Cl. 53—24 **12 Claims**



This high speed yarn take-up system consists of a pneumatic injector nozzle rotatably mounted off-center of a single flighted rotating screw. Yarn is injected into the area exposed at the trailing edge of the screw and compressed and moved forward in a compression chamber by the feeding of the screw. A plastic tube is continuously formed around the compression chamber to receive the yarn mass as it discharges, thus forming a tube of indefinite unlimited length and from ¼ to 4 inches or larger in diameter. The tube may contain a single end or multiple ends of yarn. The yarn can be removed from the tube at high speeds by simply slitting the plastic as the yarn is pulled from the package.

3,759,011

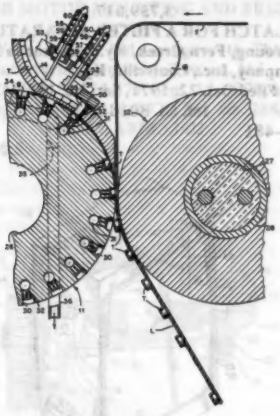
PACKAGING MACHINE FOR PACKAGING UNIFORM ARTICLES SUCH AS PHARMACEUTICAL TABLETS

Vambola Akke, Hackensack, N.J., assignor to Reed-Lane, Inc., Hackensack, N.J.

Filed May 4, 1972, Ser. No. 250,383
Int. Cl. B65b 47/10
U.S. Cl. 53—184 **1 Claim**

A machine for packaging articles of uniform size, such as pharmaceutical tablets, in a blister type package utilizing laminating rolls to form the package from a pair of webs of indefinite length and an article feeding device for positioning the articles between the two webs as they lead to the nip between the laminating rolls. The article feeding device is in the form of a generally vertical chute which at its lower end curves about the surface of one of the laminating rolls overlying the web passing over such roll. The roll itself contains a die cavity which passes beneath the curved lower portion of the chute, and the web prior to passing beneath the chute is deformed into the die cavity such that a pocket, i.e., a blister, is formed in the web as it passes beneath the chute. The lower end of the chute is terminated in a lateral passageway approximately perpendicular to the passageway through the chute, and a plunger is provided to transfer an article from the bottom of the chute through such lateral passageway into the

pocket. The web with the pocket containing the tablet or other article is then immediately positioned against the other web at the nip of the laminating rolls and the two webs are



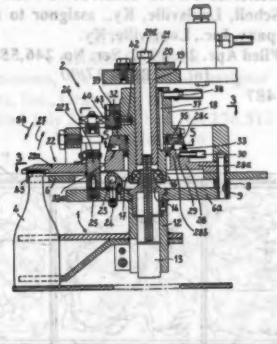
caused to adhere by pressure, and heat or the application of adhesive to one of the webs.

3,759,012

DEVICE FOR FITTING CAPS TO CONTAINERS

Roger Francois Mathieu Pagay, Lyon, France, assignor to Societe Nouvelle Baele Gangloff, Villeurbanne, France

Filed Oct. 19, 1971, Ser. No. 190,609
Claims priority, application France, Oct. 20, 1970, 7038640
Int. Cl. B65b 7/28
U.S. Cl. 53—306 **5 Claims**



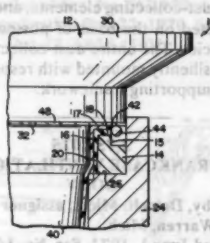
This device for fitting closing caps to containers filled with liquid, semi-liquid or pulverulent products, as they emerge from a filling machine, is easily adapted to most existing filling machines. It comprises essentially a rotary spider having a vertical axis and adapted to receive the containers as they are delivered from the filling machine. Said spider carries a head adapted to revolve in synchronism therewith and to dispense the caps to be fitted to said containers. Said head comprises, in combination with each notch of said spider, a cranked lever fulcrumed about a horizontal axis, each lever having one end directed outwards and centered to the notch associated therewith, and provided on its lower face with cap gripping means enabling it to grip and retain the caps separately, means being provided for displacing angularly towards the neck of the container engaged in the relevant notch the aforesaid free end of said lever, after said lever has picked up a cap during its travel past the downstream end of a cap dispensing channel.

3,759,013

CLOSURE APPARATUS

Guenter Zimmermann, 600 Casler Ave., Clearwater, Fla.

Filed Dec. 13, 1971, Ser. No. 207,126
Int. Cl. B65b 7/28
U.S. Cl. 53—329 **5 Claims**



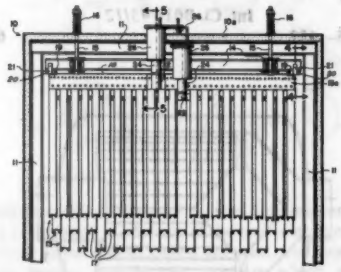
A method and apparatus for sealing aluminum containers comprising a plurality of annular cup retaining inserts mounted in rows and columns on a conveyor-like platform, each insert having a resilient sealing ring with substantially L-shaped cross-section fixedly attached to its upper surface and extending vertically downward along the internal vertical wall of the insert. A row of heat sealing heads, each having a horizontally disposed heat sealing face located at its lower extreme, is located above the conveyor-like platform, and each heat sealing head is concentrically aligned with and immediately above a correspondingly positioned container and insert at the sealing station. The sealing process comprises compressing a lid placed over the opening of the container and the upper surface of the rim of the container between the heat sealing face and the sealing ring whereby the lid and container are uniformaly sealed together to effectively isolate the contents of the container from the surrounding environment.

3,759,014

METHOD AND APPARATUS FOR DISLODGING ACCUMULATED DUST FROM DUST COLLECTING ELEMENTS

Harold B. Van Dyken, II, Keany, and Denard A. Brandt, Tucson Highway, both of Ariz., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed May 12, 1971, Ser. No. 142,476
Int. Cl. B03c 3/76
U.S. Cl. 55—96 **13 Claims**



An electrostatic precipitator for industrial dusts has dust-collecting elements mounted for transverse vibration and vibrating means that insures maximum effectiveness in dislodging dust accumulations, without the destructive longitudinal rapping techniques customarily employed by the art. The dust-collecting elements are hinge mounted, either individually on respective axes or collectively on an axis in common, with the hinge axis or axes extending in general parallel-

ism with the transverse vibratory motion, i.e. with the respective waves that travel along the lengths of the elements, so no force moments are transmitted to the supporting structure. Vibratory motion is applied by any suitable means, such as vibrators of various conventional types, through a moment arm located at or adjacent to the hinge mounting. The vibration is preferably controlled so as to match the natural frequency of the dust-collecting elements, and such elements are preferably selected on the basis of possessing easily induced natural frequencies. The entire dust-collecting structure is advantageously resiliently mounted with respect to the enclosing housing and its supporting framework.

3,759,015

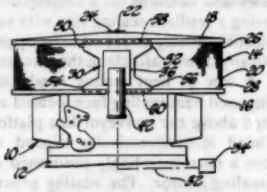
POSITIVE CRANKCASE VENTILATION AIR FILTER BODY

Richard M. Saxby, Detroit, Mich., assignor to Holley Carburetor Division, Warren, Mich.

Filed June 1, 1971, Ser. No. 148,344

Int. Cl. F02m *35/00*

U.S. Cl. 55—350 **4 Claims**



An air filter body has upper and lower flange portions which are respectively abutingly engaged with a downward turned lip or flange of an upper retainer plate of an associated engine air intake air cleaner assembly and with an upwardly turned lip or flange of a lower support plate of the same air cleaner assembly; the body includes a recess for carrying therein suitable filter means which is juxtaposed to the air cleaner assembly.

3,759,016

CENTRIFUGAL SEPARATORS

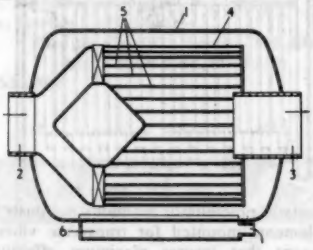
Allen Smith, Newcastle-upon-Tyne, England, assignor to Reyrolle Parsons Limited, Durham, England

Continuation-in-part of Ser. No. 850,172, Aug. 14, 1969, abandoned. This application Feb. 9, 1972, Ser. No. 224,811

Claims priority, application Great Britain, Aug. 21, 1968, 40,050/68

Int. Cl. B01d *45/12*

U.S. Cl. 55—452 **6 Claims**



A centrifugal separator for separating liquid particles from a gas comprising a tubular member, means for imparting swirl to the gas as it enters the member, the member having elongated slots in its wall which slots extend in a generally axial direction of the member such that they lie transversely across the path of the gas in the region of the member, the edges of the walls defining the slots being aligned so as to provide a substantially smooth surface to the passage of the gas within the member.

3,759,017

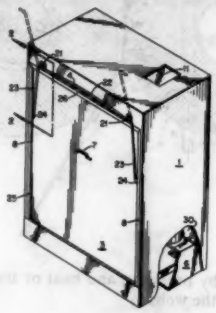
LATCH FOR A FILTER APPARATUS

George W. Young, Fern Creek, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 22, 1971, Ser. No. 191,942

Int. Cl. B01d *27/08*

U.S. Cl. 55—481 **7 Claims**



A filter apparatus having a removable door or panel member and a latch member pivotally mounted to a filter housing which is adaptable for engagement with the removable door member, the latch member including a base portion pivotally attached to the housing and arm portions extending generally at right angles to the base portion and being adaptable for engaging relationship with the door.

3,759,018

U-SHAPED FLUID TREATING FILTER

Howard O. Scholl, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Apr. 24, 1972, Ser. No. 246,558

Int. Cl. B01d *27/00*

U.S. Cl. 55—487 **6 Claims**

An improved air filter of U-shaped configuration including a frame having two longitudinally extending border members and a plurality of transversely extending support members; two of the transversely extending support members being exterior support members disposed at the outer extremity of the filter, one of these exterior support members being at generally the upper extremity of one side of the U-shaped filter and the other exterior support member being at the extremity of the opposite side of the U-shaped filter; two of said transversely extending support members being interior support members disposed at the juncture of each side with the base of the U-shaped frame; the border members being adapted to pivot about the axis of the interior transversely extending support members. The filter further includes mounting means on the exterior transversely extending support

members for removably mounting of the filter in an air processing unit.

3,759,019

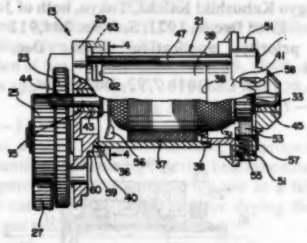
CANTILEVER MOTOR MOUNTING AND BRUSH HOLD-DOWN

Kenneth R. Wells, Joppa, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Continuation of Ser. No. 72,371, Sept. 15, 1970, abandoned. This application Sept. 6, 1972, Ser. No. 286,546

Int. Cl. A01d *53/02*

U.S. Cl. 56—10.5 **2 Claims**



An electric lawnmower including a frame supported for movement over the ground by wheels. A reel is supported upon the frame and cooperates with a bedknife to cut grass as the mower travels along the ground. An electric motor drives the reel and includes fastening means interconnecting its parts and attaching it upon the frame. In addition, the frame is constructed to accommodate different sizes (and capacities) of motors.

3,759,020

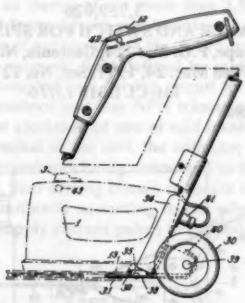
GRASS CLIPPER

Frank A. Simmons, Grayslake, Ill., assignor to Burgess Vibrocrafters, Inc., Grayslake, Ill.

Filed July 31, 1972, Ser. No. 276,512

Int. Cl. A01d *35/26*

U.S. Cl. 56—17.5 **14 Claims**



A motor driven hand operated grass clipper for lawn trimming has a knife blade arranged for rotation between a pair of fixed grass combs. Grass accumulation at the hub of the rotor is avoided by the provision of a solid circular central area which may be a separate disk and which limits the blade cutting edges to the end portions only and throws out clippings that might otherwise wind around the rotating mechanism. An extension handle and a skid attachment are provided.

3,759,021

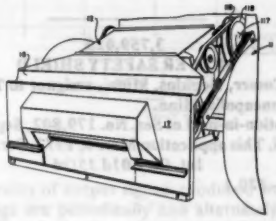
GEAR DRIVE AND SUPPORT FOR CORN HARVESTING UNIT

Lester Dale Schreiner, 301 N. Scott St., Ankeny, Iowa, and John Joseph Shindelar, 295 N. W. 66th Ave., Des Moines, Iowa

Division of Ser. No. 5,644, Jan. 21, 1970, Pat. No. 3,589,110, which is a continuation of Ser. No. 662,928, Aug. 24, 1967, abandoned. This application Oct. 22, 1970, Ser. No. 83,250

Int. Cl. A01d *45/02*

U.S. Cl. 56—106 **7 Claims**



A support and drive for a corn harvesting unit that includes a gear housing adapted for transverse adjustment along a transverse beam and having a transverse shaft receiving opening that permits adjustment of the gear housing along a transverse drive shaft, a corn harvesting unit framework supported at its rear end on the gear housing whereby the framework in the corn harvesting mechanism carried on the framework is supported in cantilever fashion on the gear housing, and gear mechanism within the gear housing having external terminal portions connected to the harvesting mechanism whereby the entire harvesting mechanism is driven by gears within the gear housing and the entire harvesting mechanism and its framework is supported on the gear housing.

3,759,022

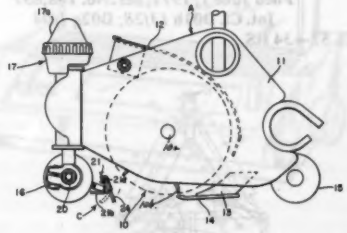
MOWER COMB

Merton F. Snyder; William C. Lindquist, and Dale A. Klemenhagen, all of Minneapolis, Minn., assignors to Toro Manufacturing Corporation, Minneapolis, Minn.

Filed June 1, 1971, Ser. No. 148,574

Int. Cl. A01d *55/20*

U.S. Cl. 56—252 **12 Claims**



A comb assembly for use with a reel type mower in which the comb is mounted in advance of the reel so as to engage the grass in front of the reel to loosen the grass, and straighten up bent over blades, and loosen stringers which may have become loosely attached to the turf so as to maximize the number of blades and stringers available to the cutting action of the reel, and to provide a more thorough and high-quality cut, particularly on the putting greens of golf courses. The ground engaging portion of the comb is formed of a resilient plastic material which does not injure the grass, does not tear the turf, passes the twigs without damage to the turf and does not damage the reel or bed-knife should the teeth break off

and pass between the reel blades and the bed-knife, the teeth being of such resiliency that they return to their normal condition when unstressed and do not quickly develop a stressed breakline through repeated flexing as metal will do. Furthermore, the teeth are sufficiently elastic to enable them to accurately follow the ground contour over which the mower is traveling. One version of the comb of this invention is also designed so that the comb assembly can also function as a scraper for one of the rollers so as to clean and remove therefrom, fresh clippings which tend to collect thereon and interfere with the proper operation of the mower. In another version, a portion of the comb assembly serves as a grass shield.

3,759,023

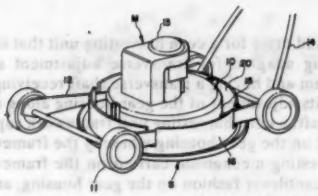
MOWER SAFETY SHIELD

Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 179,802, Sept. 13, 1971, abandoned. This application Mar. 6, 1972, Ser. No. 232,132

Int. Cl. A01d *35/26*

U.S. Cl. 56—320.1 **12 Claims**



An annular free floating shield for a rotary mower which rides freely on the ground being traversed and completely surrounds the periphery of the mower housing to prevent objects from escaping therefrom, the shield being movable simultaneously with the mower and free to float vertically relative thereto in accordance with ground contours without at any time exposing the space between the housing and the ground so as to permit objects to escape therefrom.

3,759,024

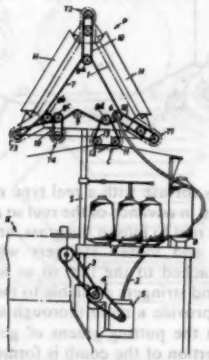
METHOD OF AND APPARATUS FOR IMPARTING TWIST TO YARNS

Lewis Henry Colton, 470 Mansfield Rd., Nottingham, England

Filed June 1, 1971, Ser. No. 148,837

Int. Cl. D01h *13/28*; D02g *1/04*

U.S. Cl. 57—34 HS **7 Claims**



An apparatus for producing a plurality of pairs of matched yarns having identical twist characteristics in which yarns pass through a processing unit having heaters and twist heads. A composite twist head may be used which has a plurality of annular twisting components driven at the same speed from a common drive source.

Alternatively, the twist head may have a single twisting component. The or each component receives one or more pairs of yarns, with the yarns in each pair travelling in respectively opposite directions through the component.

3,759,025

FALSE TWISTER DEVICE FOR PRODUCING CRIMPS IN FILAMENT YARN

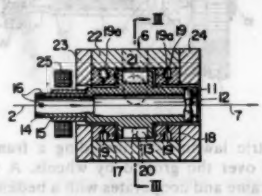
Isao Takai, Komatsu-shi, Ishikawa-ken, and Junshiro Ogura, Ota-ku, Tokyo, both of Japan, assignors to Oda Gosen Kogyo Kabushiki Kaisha, Ishikawa-ken and Ogura Hoseki Seiki Kogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Dec. 6, 1971, Ser. No. 204,911

Claims priority, application Japan, Dec. 11, 1970, 45/109368

Int. Cl. D01h *7/92*; D03g *1/04*

U.S. Cl. 57—77.3 **6 Claims**



An improved, efficient false twister device for producing crimps in a filament yarn, which device can be rotated at the speed of at least 750,000 r.p.m. This device comprises a turbine-blade type high speed rotary member having blades formed on its outer periphery and having a filament yarn passageway formed axially therethrough, and a twister pin provided in the said passageway, the said rotary member being supported by gas-bearings within a casing, the said rotary member further comprising means for jetting a pressurized fluid onto the blades of the said rotary member. During the operation, the twister pin is cooled indirectly by the said pressurized fluid to prevent an elevation of the temperature of the said twister pin. By the use of this apparatus, the productivity of crimped yarn can be almost doubled as compared with that of the prior art.

3,759,026

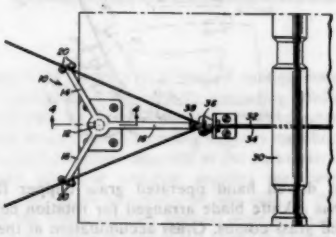
YARN BREAKER AND SWITCH FOR SPINNING FRAMES

William K. Hope, P.O. Box 224, Gastonia, N.C.

Filed Mar. 24, 1971, Ser. No. 127,655

Int. Cl. D01h *13/16*

U.S. Cl. 57—80 **7 Claims**



A yarn breaking machine control assembly is provided which automatically breaks one of a pair of moving yarns when the other has been broken or run out and controls an electrical circuit which disables the spinning frame. The assembly includes two pairs of spaced vertical guide pins with

cutting surfaces thereon and a vertical stabilizing finger attached to a pivotally mounted support plate which in turn is connected to an electrical switch. Under normal operating conditions, a moving yarn passes between each pair of vertical guide pins, with the support plate being stabilized against rotation by the stabilizing finger confined against movement by the moving yarns on each side of and close to the pin. When one of the yarns breaks or runs out, the support plate, no longer stabilized by the stabilizing finger, rotates to both actuate the switch and to turn the guide pins such that their cutting surfaces grab onto and sever the remaining moving yarn.

3,759,027

EXTRUDED ASBESTOS YARN FOR PAPER DRYER FELTS

Irvin Barnett, Martinsville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Continuation of Ser. No. 780,284, Nov. 29, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,451

Int. Cl. D02g *3/04, 3/20*

U.S. Cl. 57—140 BY **13 Claims**

A process, a fabric, and a use thereof, the process including preferably uniformly weaving interlocked asbestos fibers into the fabric porous to a gas suitable for use as a felt in an apparatus for carrying wet paper and for drying the paper by passing the gas through the porous felt.

3,759,028

ELECTRONIC WATCH

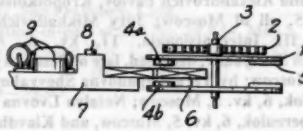
Yuki Tsuruishi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 2, 1972, Ser. No. 222,962

Claims priority, application Japan, Feb. 10, 1971, 46/5219

Int. Cl. G04c *3/04;* **G04b** *17/00*

U.S. Cl. 58—28 A **3 Claims**



An electronic watch having a balance wheel formed from two substantially round boards having at least a pair of flat permanent magnets mounted in facing relation on said boards. Said boards have an inertia of not more than 2,500 mg-mm², the balance wheel formed from said boards and a hair spring having a frequency of not less than 4 Hz. A two-terminal coil is positioned in the magnetic field defined by said pair of permanent magnets coupled to a driving circuit formed from at least one PNP transistor and one NPN transistor, and a battery. The collector electrode of one of said transistors is connected to one terminal of the coil, the collector electrode of the other of said transistors being connected to the other terminal of said coil. Said driving circuit connects said coil with said battery intermittently according to the vibration of the balance wheel to supply current pulses to the coil to drive said balance wheel.

3,759,029

ELECTRONIC TIMEPIECE WITH A TIME SIGNALLING DEVICE

Shojiro Komaki, 231 Iguchi, Mataka-shi, Tokyo, Japan

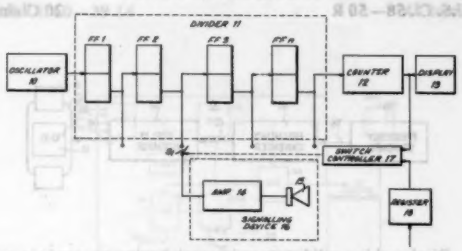
Filed Nov. 30, 1972, Ser. No. 310,913

Claims priority, application Japan, Dec. 2, 1971, 46/113311; Dec. 2, 1971, 46/113313

Int. Cl. G04c *21/16;* **G04b** *23/10*

U.S. Cl. 58—38 **8 Claims**

An electronic timepiece with a time signalling device wherein to the time signalling device is applied an output signal with a predetermined frequency which is produced from one of a plurality of cascade connected, bistable multivibrator stages in a divider which is used for dividing a high frequency signal into a standard time signal of low frequency.



Further, a plurality of output signals produced from the corresponding stage are periodically and alternately applied to the time signalling device for enhancement of the tone of the time signalling sound.

3,759,030

DIGITAL CLOCK

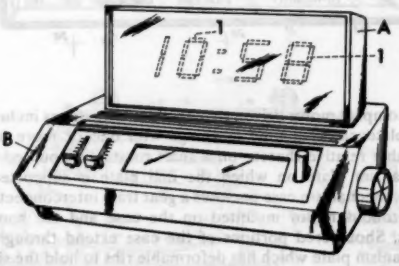
Yasuo Wakabayashi, No. F-191 Kamakura, No. 1362-293-Aza-Hyakuyanato, Zushi-City, Japan

Filed Oct. 12, 1971, Ser. No. 188,256

Claims priority, application Japan, Nov. 16, 1970, 45/100183; Apr. 28, 1971, 46/027532

Int. Cl. G04b *19/30*

U.S. Cl. 58—50 R **9 Claims**



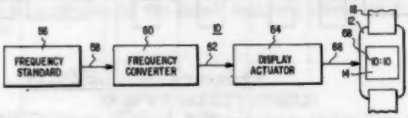
A digital clock comprising an indication section for indicating numerals which represents the time and a control section for forming required numerals. The indication section includes at least four electric lamp type numeral indicator each having seven-segmented electric bulbs which are selectively turned on or off to compose any required figure of 0 to 9. The control section includes switch means each electrically connected with corresponding one of the bulbs, and rotating drums one for each of said numeral indicators. The drums are rotated at respectively constant rate. The drums have control areas, such as grooves formed thereon which areas serve to actuate or deactuate the switch means according to the rotation of the drums to turn on or off the associated bulbs for providing digital indication of time.

3,759,031

MODULAR SOLID STATE WRISTWATCH

Robert E. McCullough, Lancaster, and Cleon W. Hougendobler, East Petersburg, both of Pa., assignors to HMW Industries, Inc., Lancaster, Pa.

Filed Jan. 26, 1972, Ser. No. 220,922
Int. Cl. G04b *19/30, 37/04, 27/00*
U.S. Cl. 58—50 R 20 Claims



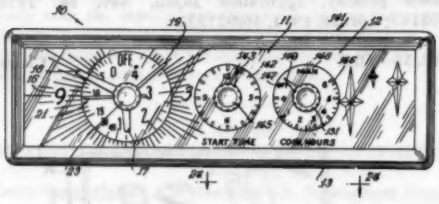
Disclosed is a solid state wristwatch having no moving parts and utilizing a digital time display of light-emitting diodes. The watch features a modular construction for ease of assembly and reliability. Also disclosed is a setting magnet for the watch stored in the watch bracelet.

3,759,032

MOTOR DRIVEN TIMER

Ronald M. Bassett, and Joseph F. Gluth, both of Chicago, Ill., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Division of Ser. No. 878,618, Nov. 21, 1969, Pat. No. 3,601,473, which is a continuation-in-part of Ser. No. 817,500, April 18, 1969, abandoned. This application May 14, 1971, Ser. No. 143,630
Int. Cl. G04b *37/00*; G04c *23/00*
U.S. Cl. 58—55 4 Claims



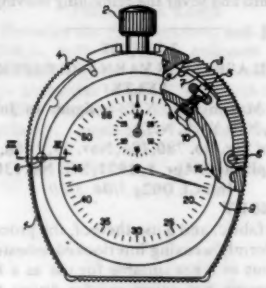
A compact motor driven timer for cooking stoves includes a dial plate carrying time markings with one or more hands rotatable relative thereto on a shaft rotatably mounted on a mechanism plate on which the dial plate is supported. A plastic mechanism case encloses a gear train interconnecting a synchronous motor mounted on the case and the hand or hands. Shouldered portions of the case extend through the mechanism plate which has deformable ribs to hold the shouldered portions of the case and thereby the case itself in place. Screws extend through the case to secure it and the motor to the mechanism plate. The gear train includes one or more clutches to rotate an interval hand at different speeds. A buzzer arm is released to vibrate in the magnetic field of the motor at the end of the manually preset interval. Time indicating hands are also driven by the motor. The interval hand is concentrically mounted with the time indicating hands or is offset therefrom. A notch is provided in the mechanism case to hold the ends of the leads to the motor temperarily in position. The gear train also operates a range timer which includes contacts that are closed at the beginning of a variable time cycle to start a cooking operation at a preset time of day. The contacts are opened at the end of the preset time cycle. The range timer can be set for manual operation by manual closure of the contacts.

3,759,033

TIMEPIECE

Jacques Jeanmonod, Boudry, Switzerland, assignor to Heuer-Leonidas S.A., Bienne, Switzerland

Filed Feb. 17, 1972, Ser. No. 227,085
Claims priority, application Switzerland, Feb. 19, 1971, 2434/71
Int. Cl. G04f *7/04*
U.S. Cl. 58—74 9 Claims



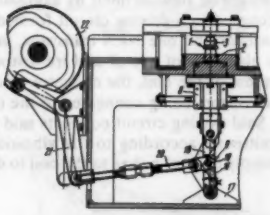
In a timepiece comprising at least one slidably mounted push-piece, the push-piece is indirectly actuatable by a manually operable key pivotally mounted on the timepiece casing.

3,759,034

DEVICE TO FORM CHAIN LINKS OF VARIOUS SHAPES FROM ROUND WIRE

Igor Dmitrievich Trofimov, Mosfilmovskaya ulitsa 25, kv. 78; Jury Mikhailovich Korobeinikov, Deguninskaya ulitsa, 12, kv. 5; Vadim Alexandrovich Pavlov, Kropotkinskaya ulitsa, 40, kv. 15, all of Moscow; Jury Mikhailovich Smirnov, Ploschad III Internatsionala, 11, kv. 6, Azov; Lev Nikolaevich Shevyakov, deceased, late of Pestavsky pereulok, 6, kv. 5, Moscow; by Vera Stepanovna Shevyakova, Pestovsky pereulok, 6, kv. 5, Moscow; Natalya Lvovna Tiskovich, Petovsky pereulok, 6, kv. 5, Moscow, and Klavdia Andreevna Shevyakova, ulitsa Kuusinena, 17, kv. 126, Moscow, all of U.S.S.R. (administrators)

Filed Mar. 30, 1972, Ser. No. 239,623
Int. Cl. B21l *1/02*
U.S. Cl. 59—27 2 Claims

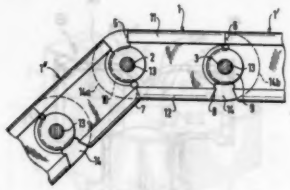


A chain making machine having a split bending mandrel consisting of a leverage-driven movable part and a stationary part engaging each other in a plane for joining which is disposed somewhat higher then the axis of symmetry of the link in order to completely rule out flash formation in the plane of symmetry of the link. The leverage provides for rigid engagement of the two parts of the mandrel, thus precluding flash formation in the plane of their joint.

3,759,035
SELF-SUPPORTING ARTICULATED CHAIN

Hans-Peter Schmidberger, Munich, Germany, assignor to Gebr. Hennig GmbH, Dorstr., Germany

Filed May 18, 1972, Ser. No. 254,529
Claims priority, application Germany, May 26, 1971, G 71 205 45.3
Int. Cl. F16g 13/16
U.S. Cl. 59—78.1 8 Claims

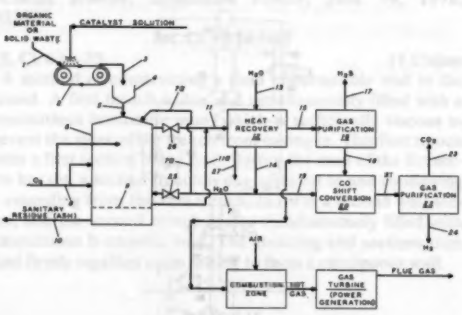


A self-supporting articulated chain composed of identical links pivoted to one another, each link terminating at its opposite ends on one side of its longitudinal center plane in parallel abutment edges and on the other side of such plane in obliquely disposed abutment edges, alternate ones of the links having cover members of such length as to project beyond both ends of its associated link to provide a cover for the gap which exists between adjacent links. One end of each link is displaced laterally by an amount corresponding to its wall thickness and the longitudinal edges of each link are bent to form edges of double wall thickness.

3,759,036
POWER GENERATION

Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 34,834, May 5, 1970. This application Mar. 1, 1970, Ser. No. 119,820
Int. Cl. F02g 3/00
U.S. Cl. 60—39.05 14 Claims

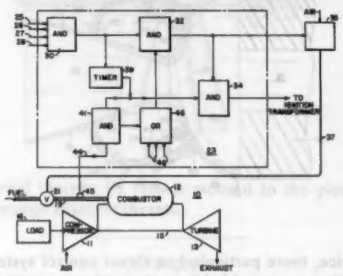


A process for gasifying waste material and producing energy which comprises contacting a solid organic waste material containing at least 10 weight percent oxygen with steam in the presence of an alkali metal carbonate catalyst at an elevated temperature to obtain a gas, combusting at least a portion of said gas to obtain combusted gases, and expanding the combusted gases through a turbine to rotate the turbine. Preferably, the energy of the rotating turbine is used to drive an electricity generator. It is strongly preferred to use a potassium carbonate catalyst in the gasification of the oxygen-containing waste material. Preferably feedstocks include ordinary municipal refuse or garbage having the requisite oxygen content and usually having a more preferred oxygen content above at least 20 weight percent oxygen.

3,759,037
OVER TEMPERATURE PROTECTION SYSTEM FOR A GAS TURBINE

Roy W. Kiscaden, Springfield, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1972, Ser. No. 221,184
Int. Cl. F02c 7/26
U.S. Cl. 60—39.14 4 Claims

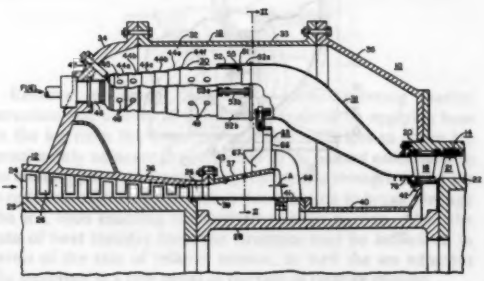


A system to protect the turbine against transient high temperatures during the ignition period of a gas turbine. The protection system measures the pressure or flow rate of the fuel entering the turbine. If the pressure or flow rate exceeds a value which will produce an over temperature condition, a signal is sent to a fuel shutoff valve to interrupt the fuel flow to the turbine.

3,759,038
SELF ALIGNING COMBUSTOR AND TRANSITION STRUCTURE FOR A GAS TURBINE

Augustine J. Scalzo, Philadelphia., and Leroy D. McLaurin, Springfield, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 9, 1971, Ser. No. 206,433
Int. Cl. F02c 7/20; F01d 9/04
U.S. Cl. 60—39.32 9 Claims



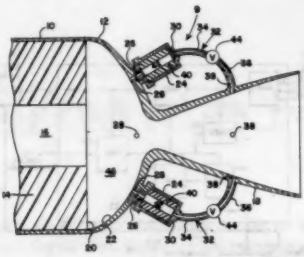
Gas turbine combustion apparatus in which the combustor is anchored at its upstream end and the transition member is anchored at its downstream end, the downstream end of the combustor and the upstream end of the transition member being disposed in mutual engagement and alignment and freely slidable relation during thermal expansion by a clevis support structure and sealed at their engaging portions by a slotted twin layer cuff spring.

3,759,039

THRUST CONTROL AND MODULATION SYSTEM

Allan E. Williams, Kingsland, Ga., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Continuation-in-part of Ser. No. 558,794, June 20, 1966, abandoned. This application Nov. 22, 1968, Ser. No. 778,172
Int. Cl. F02k 1/14
U.S. Cl. 60—231 1 Claim



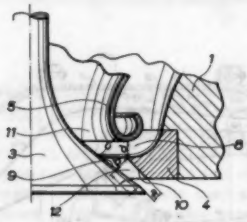
A device, more particularly a thrust control system, is disclosed wherein gases bled from the rocket motor combustion chamber are thereafter conduited to a canister having a perforated solid propellant grain therein, which is combusted by the gases bled from the main chamber and thereafter conducted to discharges arranged with respect to the rocket motor to provide thrust vector control, roll and/or pitch control and thrust modulation. Associated valve control means is also provided.

3,759,040

DEVICE FOR BETTER EXPLOITATION OF THE EXHAUST ENERGY FROM AN INTERNAL COMBUSTION ENGINE

Olavi Peltomaki, Frilundintie 3, Vaskiluoto, Finland

Filed Oct. 1, 1971, Ser. No. 185,520
Claims priority, application Sweden, Oct. 19, 1970, 14062/70
Int. Cl. F02b 75/10, 37/04
U.S. Cl. 60—305 6 Claims



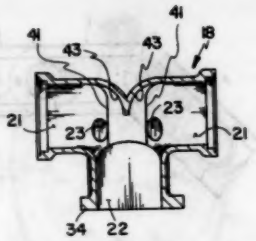
A device for better exploitation of the exhaust gas energy from an internal combustion engine equipped with poppet valves, in particular for an exhaust gas driven compressor. Subsequent to a narrow continuation succeeding the sealing point of the valve seat an annular opening is provided, to which air is supplied at atmospheric pressure or under appropriate pressure, said opening as well as the upper surface of the valve and the inner surface of the valve seat being shaped so that here is formed an ejector, in which the exhaust gases flowing at high speed pick up air that has been supplied to the opening.

3,759,041

EXHAUST WATER SEPARATOR FOR MARINE ENGINES

Irving W. North, Oshkosh, and Herbert A. Bankstahl, Fond du Lac, both of Wis., assignors to Brunswick Corporation, Chicago, Ill.

Filed Jan. 17, 1972, Ser. No. 218,315
Int. Cl. F01n 3/02
U.S. Cl. 60—310 10 Claims



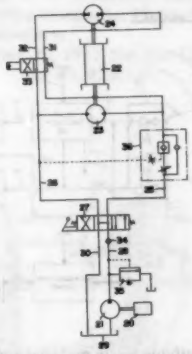
A water separator for a marine propulsion system. Arcuate exhaust elbows are provided which force cooling water in the exhaust to the outside by centrifugal action. This water is removed and expelled through the transom.

3,759,042

LIQUID PRESSURE DRIVING DEVICE

Shigeru Shioda, Minata-ku, Tokyo; Fumio Ogasahara, Matsudo-shi, and Minoru Otomo, Ichikawa-shi, all of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1971, Ser. No. 143,457
Claims priority, application Japan, May 15, 1970, 45/40891
Int. Cl. F16h 39/02
U.S. Cl. 60—483 9 Claims



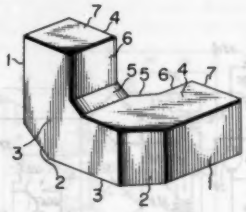
A liquid pressure driving device for selective change of the rotary speed of a load member within its allowable output torque, which permits a change in a speed ratio from several to ten times or more between low and high speeds by use of a plurality of liquid pressure motors which are coupled to the load member which and are separated into individual pairs with a different displacement per revolution of the load member with such an arrangement as to make it possible to change connections of such liquid pressure motors in one of such pairs in either the forward or the reverse direction.

3,759,043

MOLDS FOR USE IN MANUFACTURING ENERGY DISSIPATING CONCRETE BLOCKS FOR RIVER AND MARINE WORKS

Kazumi Tokunaga, No. 1410, Sakae-machi, City of Soka, Saitama Prefecture, Japan

Filed Aug. 25, 1969, Ser. No. 852,580
Claims priority, application Japan, Sept. 19, 1968, 43/67813
Int. Cl. E02b *3/08, 3/14*
U.S. Cl. 61—4 1 Claim



Molds for use in manufacturing energy dissipating concrete blocks for river and marine works are composed of a set of plates coming into contact with concrete, each having a simple geometrical shape in its plan view, and various type of molds can be obtained by the combination of the plates. The concrete blocks manufactured by the molds can be easily combined to form regular geometrical designs having specific percentages of voids respectively, resulting in their vast application in all sorts of marine and river works.

3,759,044

METHOD OF EARTH WALL CONSTRUCTION USING CEMENTITIOUS BENTONITIC MUD

Claude Caron, Samoreau, and Jean Hurtado, Paris, both of France, assignors to Soletanche Societe Anonyme, Paris, France

Filed June 15, 1971, Ser. No. 153,424
Claims priority, application France, June 16, 1970, 7022101
Int. Cl. E02d *5/18*
U.S. Cl. 61—35 11 Claims

A method of constructing a fluid impermeable wall in the ground. A first trench is dug and simultaneously filled with a cementitious bentonitic mud, which is sufficiently viscous to prevent the sides of the trench from caving in. This first trench forms a first section of the wall. Before the mud of the firt section has set, a second trench is dug adjacent to and continuing or extending from the first trench, to form a second wall section, and the second trench is also simultaneously filled with cementitious bentonitic mud. The abuttting end sections then bond firmly together upon setting to form a continuous wall.

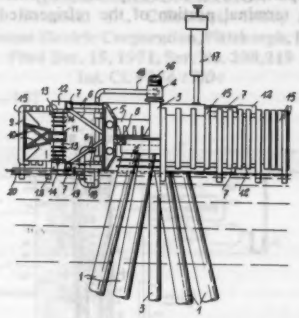
3,759,045

MONOMOORING SEA PLATFORM

Vladimir Nastasic, San Donato Milanese, Italy, assignor to Interconsult S.p.A., Milan, Italy

Filed Feb. 4, 1972, Ser. No. 223,566
Claims priority, application Italy, Oct. 26, 1971, 30325 A/71
Int. Cl. B63b *21/00*
U.S. Cl. 61—46 3 Claims

A sea platform comprising a metal structure anchored to ground and a head projecting from the sea surface and carried by the metal structure by a bearing, to the vertical axis of which the head is freely rotable. The head comprises two annular bodies interconnected by resilient elements. The metal pipes extending from the inlets connectable to the hoses to the pipes upward extending from the ground are all enclosed within the periphery as defined by the rotable head. Thus, the risks are substantially reduced of damaging the platform and pipes carried thereby by vessels moored to the platform or passing through adjacent thereto.

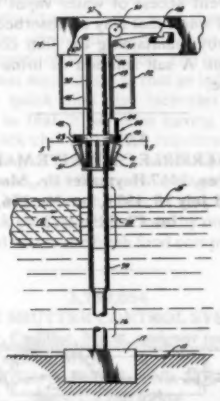


3,759,046

MOVEMENT OF MARINE STRUCTURES IN SALINE ICE

Edward O. Anders, Houston, Tex., assignor to Global Marine, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 130,092, April 1, 1971. This application Mar. 23, 1972, Ser. No. 237,398
Int. Cl. E02b *15/02*; B63b *35/12*
U.S. Cl. 61—46.5 18 Claims



Relative movement between a surface-piercing marine structure and a sheet of saline ice is enabled by applying heat to the ice from the structure at a rate sufficient to cause ice proximately adjacent the structure to be heated essentially to its melting point, at which temperature the strength of the ice is reduced sufficiently to permit the structure to break through the ice, thus enabling the desired relative motion. Also, the rate of heat transfer from the structure may be sufficient, in terms of the rate of relative motion, to melt the ice adjacent the structure at a rate equal to the rate of relative motion.

3,759,047

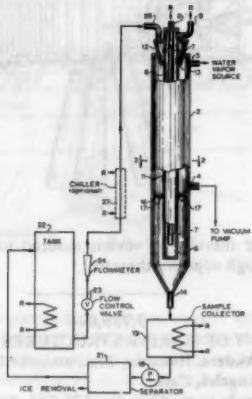
VAPOR CONDENSATION SYSTEM AND METHOD

Cary Judson King, III, Kensington; Romesh Kumar, Berkeley, and Scott Lynn, Walnut Creek, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 22, 1971, Ser. No. 201,129
Int. Cl. B01d *53/06*
U.S. Cl. 62—66 12 Claims

A flowing film of a composition of water and a solute over a refrigerated surface, is at such solute concentration and freez-

ing temperature as to de-sublimate or condense the water vapor as ice which is carried away by the film, and subsequently separated from the composition by filtering or centrifuging. A terminal portion of the refrigerated surface is



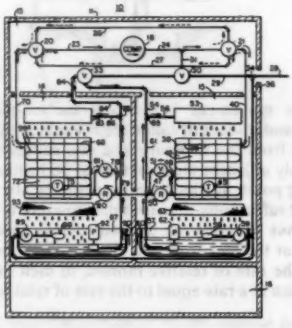
shielded to prevent access of water vapor thereto to effect removal as ice of water that may be absorbed in the film from the vapor, thereby maintaining the film concentration substantially uniform. A salt solution or brine provides an advantageous solute.

3,759,048

REVERSIBLE CYCLE ICE MAKER

Charles C. Cochran, 2467 Haymaker Dr., Monroeville, Pa.

Filed July 28, 1971, Ser. No. 166,836
Int. Cl. F25c 1/12
U.S. Cl. 62—73 **11 Claims**



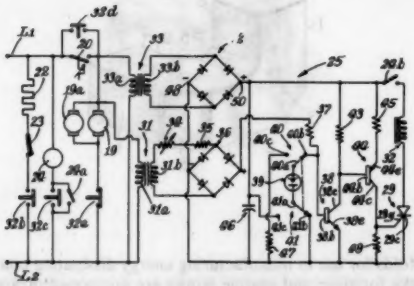
An ice maker comprising a compressor fluidly connected to two refrigerant coils, each coil in heat transfer relation with a corresponding water tube. Reversing valves alternately divert the refrigerant to the first and second coil to alternately produce ice in one of the tubes and to harvest ice in the other of the tubes.

3,759,049

DEFROST CONTROL

Clarence A. Bell, Lubbock, Tex.; Ralph Gwinn, Red Oak, Iowa; Rolland N. Jennison, Manhattan, Kans.; Bryon Jones, Stillwater, Okla., and Philip W. Strauss, Norwood, Mass., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 25, 1972, Ser. No. 229,406
Int. Cl. F25d 21/00
U.S. Cl. 62—80 **12 Claims**



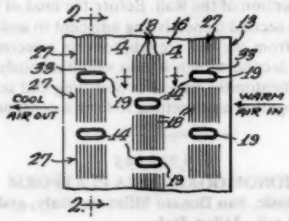
A refrigeration apparatus having means for automatically controlling cyclical defrosting thereof. The control includes means responsive both to humidity conditions within the apparatus and to time for providing automatically initiation of the defrosting operation as a function of both such parameters.

3,759,050

METHOD OF COOLING A GAS AND REMOVING MOISTURE THEREFROM

Raymond S. Slaasted, and Jack C. Dudley, both of Racine, Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Continuation of Ser. No. 807,492, March 17, 1969, abandoned. This application Feb. 24, 1972, Ser. No. 229,015
Int. Cl. F25d 21/14
U.S. Cl. 62—93 **2 Claims**



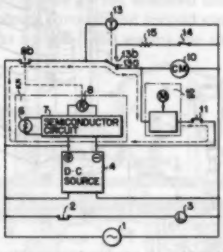
The method of chilling a gas that contains moisture and simultaneously condensing and removing the moisture to prevent the condensate being blown in substantial amounts with the chilled gas in which the moisture containing gas is blown sideways across upright solid surfaces that are chilled to a temperature less than the dew point of the gas to form condensate on the surfaces, intercepting the condensate and directing it in paths of low surface tension along the surfaces and out of the gas stream.

3,759,051

DUAL COMPARTMENT-TEMPERATURE REFRIGERATOR WITH POSITIVE INTERNAL AIR CIRCULATION

Hiroshi Ohnishi, Higashi Sumiyoshi-ku, Osaka, Japan, assignor to Tokyo Shibaura Electric Co., Kawasaki-shi, Japan

Filed Aug. 3, 1971, Ser. No. 168,628
Claims priority, application Japan, Aug. 4, 1970, 45/77911; July 23, 1971, 46/55057
Int. Cl. F25d *17/00*
U.S. Cl. 62—180 3 Claims



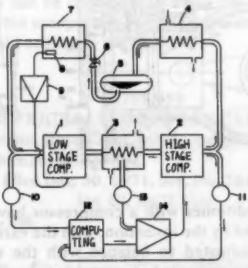
In a refrigerator of the type having freezing and cold storage compartments and a fan for positive circulation of air over the evaporator and through the compartment, the efficiency of operation is marketly improved by utilizing as a drive motor for the fan, a variable speed brushless D.C. type motor with the greater portion of the speed and commutator control circuits arranged exteriorally of the refrigerated compartment.

3,759,052

METHOD OF CONTROLLING HIGH STAGE AND LOW STAGE COMPRESSORS

Wahei Inoue, Ohta-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Maekawa Seisakusho, Tokyo, Japan

Filed Feb. 28, 1972, Ser. No. 229,726
Int. Cl. F25b *1/10*
U.S. Cl. 62—115 3 Claims



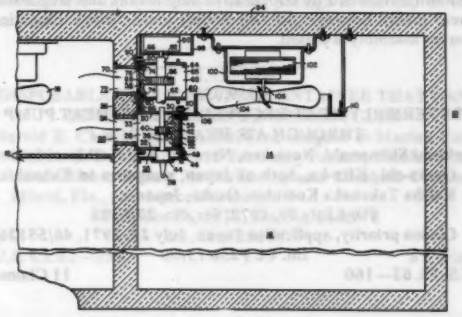
This invention relates to a method of controlling high stage and low stage compressors having non-linear control characteristics. Said method is characterized by comprising the steps of controlling the capacity of the low stage compressor during operation in accordance with a change in the temperature of a load for an evaporator, automatically computing the square root of the product of the pressure at which gas is drawn by suction into the low stage compressor and the pressure at which gas is discharged from the high stage compressor or an approximation thereof by means of an automatic computing unit, comparing the output of the automatic computing unit with the pressure of an intermediate cooler interposed between the low stage compressor and high stage compressor, and subordinatively controlling the ratio of the capacity of the low stage compressor to that of the high stage compressor by the result of the comparison.

3,759,053

AIR CONTROL FOR FRESH FOOD COMPARTMENT QUICK CHILL OPERATION

Anthony J. Swaneck, Jr., Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1971, Ser. No. 208,219
Int. Cl. F25d *17/04*
U.S. Cl. 62—157 8 Claims



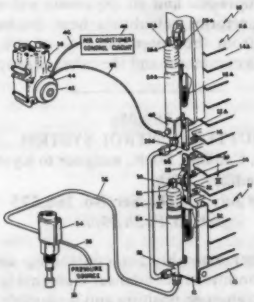
The invention provides a pair of mechanically controlled air regulating dampers used in the fresh food compartment of a refrigerator. Each of the dampers controls the admission of air from the freezer compartment into the quick chill portion of the fresh food compartment, with one of the dampers being manually set to maintain a desired temperature range within the fresh food compartment during normal operation without quick chill, and the other (quick chill) damper being used to control during a quick chill operation. The quick chill damper is coupled to a timer mechanism so that an increased setting of timer period for quick chill also increases the quick chill damper opening so that those items having a heavy cooling load to obtain quick chill have their requirements met by the simultaneous setting of the quick chill damper and the quick chill timer. The quick chill damper is arranged to be closed for any timer setting of say ten minutes or less. This feature provides for the quick chill cooling of food by only that air which is being circulated within the fresh food compartment.

3,759,054

SPLIT SHUTTER CONTROL SYSTEM

Walter P. Graber, Cadillac, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed July 3, 1972, Ser. No. 268,486
Int. Cl. F25b *39/04*
U.S. Cl. 62—183 14 Claims



A shutter assembly including a plurality of louvers shiftable between open and closed positions for controlling air flow

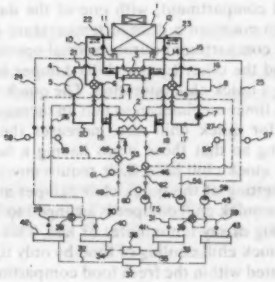
over radiator and condenser elements in a vehicle. The shutter assembly is divided into two independently operable louver sections or shutter means, one of which is operated to control air flow over the condenser while the other is operated with the first to control air flow over the radiator. A pair of actuator elements responsive to engine temperature control both sections. Valve means associated with one of the actuators is responsive to operation of the vehicle air conditioner compressor to open the louvers covering the condenser a limited amount controlled by cooperative stop means and stop abutment means between the two shutter means when the entire louver assembly is closed.

3,759,055

REVERSIBLY HEAT-RECOVERING TYPE HEAT PUMP THROUGH AIR HEAT SOURCE

Takashi Shimanuki, Nara-ken, Nara-shi, and Yoshinori Inoue, Osaka-shi, Kita-ku, both of Japan, assignors to Kabushiki Kaisha Takenaka Komuten, Osaka, Japan

Filed July 19, 1972, Ser. No. 273,305
Claims priority, application Japan, July 22, 1971, 46/55126
Int. Cl. F25b *13/00*
U.S. Cl. 62—160 **11 Claims**



A reversibly heat-recovering type heat pump through air heat source comprising an outer heat-exchanger exchanging heat between refrigerant and outer air, two inner heat-exchanger acting as condenser or evaporator of the refrigerant, a compressor and an expansion valve. The outer heat-exchanger performs selectively heat discharge to and heat absorption from the outer air. One of the inner heat-exchangers acts as condenser and the other as evaporator.

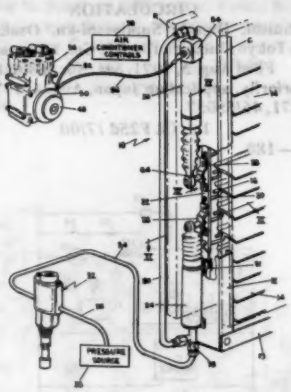
3,759,056

SHUTTER CONTROL SYSTEM

Walter P. Graber, Cadillac, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed July 3, 1972, Ser. No. 268,575
Int. Cl. F25b *39/04*
U.S. Cl. 62—183 **13 Claims**

A unified shutter assembly for controlling air flow over radiator and air conditioner condenser elements in a vehicle is normally biased to an open position and is closable in response to engine heating requirements by a first actuator to regulate the amount of flow of cooling air. A second actuator positioned for movement in opposition to the first is operated simultaneously with the air conditioning system to force the shutters open a controlled, limited amount to allow controlled air flow over the condenser sufficient for condenser cooling



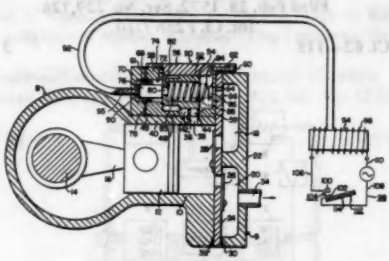
without being detrimental to engine temperature control, i.e., without significantly lowering the engine temperature.

3,759,057

ROOM AIR CONDITIONER HAVING COMPRESSOR WITH VARIABLE CAPACITY AND CONTROL THEREFOR

William A. English, Export, and Robert R. Young, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 2,838, Jan. 14, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,414
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **7 Claims**



A room air conditioner with a compressor having variable capacity is provided by the invention, with the variable capacity automatically adjusted to balance with the refrigeration load of the space being cooled. A movable valve progressively opens a portion of the compressor cylinder to the suction side of the system so that a progressively reduced volume of active cylinder is available for compression. The volume available for compression is automatically proportioned by a control arrangement which is actuated by the temperature of the space being cooled.

3,759,058

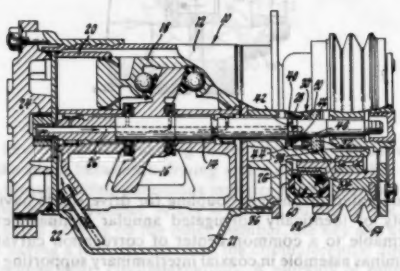
COMPRESSOR SHAFT SEAL HEATER

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 30, 1972, Ser. No. 268,069
Int. Cl. F25b *27/00*
U.S. Cl. 62—228 **3 Claims**

A vehicle air conditioning compressor is selectively driven by the engine as required to cool the passenger compartment.

The compressor includes a rotating shaft supporting a driving pulley and an electrically actuated clutch assembly connecting the shaft with the pulley during periods of air conditioning. The electrically actuated clutch includes a solenoid coil disposed in the proximity of a fluid seal preventing loss of refrigerant from the compressor around the compressor shaft. Control circuitry is provided in series with the ignition switch and includes a first current path to the clutch solenoid coil for energizing the clutch and connecting the compressor with the engine. A second current path is provided between the ignition switch and the solenoid coil, the second path including a resistance of a predetermined value thereby limiting the amount of current flow to the solenoid coil so that when the circuit is completed through the second current path the solenoid coil acts as a heater and warms the shaft seal preventing



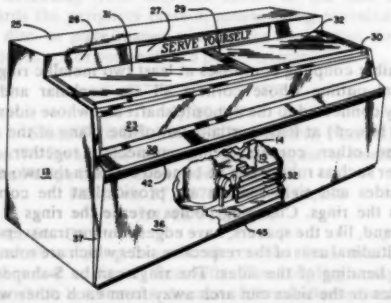
damage thereto during cold weather conditions. The resistance in the second current flow path can also be positioned in proximity to the fluid seal and likewise act as a heater in conjunction with the solenoid coil to warm the fluid seal during low temperature conditions. A bimetallic switch assembly is provided in both the first and second current paths and responds to ambient temperatures above a predetermined value to complete the circuit through the first current path so that the compressor may be drivingly connected to the engine by the clutch and cool the passenger compartment. When temperatures reach a predetermined low value the ambient temperature sensing switch moves to complete the circuit through the second current path so that the resistance and the solenoid coil can be energized to warm the fluid seal prior to operation of the compressor thereby preventing damage to the seal that would ordinarily occur.

3,759,059

REFRIGERATED DISPLAY CABINET

Andre J. Kenyon, Rosemount, Minn., assignor to Schaefer Corporation, Minneapolis, Minn.

Filed Dec. 30, 1971, Ser. No. 214,355
Int. Cl. A47f 3/04
U.S. Cl. 62—246 **8 Claims**



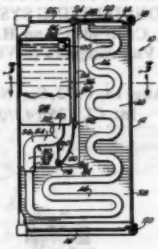
A cooling arrangement for the condenser of a refrigerated display cabinet, in which there is an upper refrigerated display chamber and a lower nonrefrigerated chamber with the condenser being located in the lower chamber, the cooling arrangement involving drawing in the ambient air through the front of the cabinet well above the floor and after it is used to cool the condenser, discharging it into the toe space of the cabinet adjacent the floor. The cabinet has a sloping front panel spaced from the insulated front wall of the cabinet and the cooling air is drawn in adjacent the top of this front panel. A portion of the air, after passing over the condenser, is directed over the condensate drain passage in the rear of the cabinet.

3,759,060

DISPOSABLE REFRIGERATED CONTAINER THAT CAN BE REFILLED, REUSED OR RECYCLED

Harold E. Chase, Coral Gables, Fla., assignor to Marian Cax; Walter C. Dunigan; Alfred Browning Parker; Whelan Malcolm Golson; Robert R. McKeown and Elizabeth Preston, Miami, Fla., part interest to each

Filed June 28, 1972, Ser. No. 266,975
Int. Cl. F25d 3/10
U.S. Cl. 62—294 **6 Claims**



A disposable container providing an internal cylinder containing a pressurized refrigerant and a valve means operable by an exterior pull-tab to open the valve means to permit the pressurized refrigerant to expand into a heat exchanger whereby heat is absorbed from the contents of the container, thereby cooling said contents. The device is preferably adapted to a container of the widely used type commonly called a "Tap Top Can" and connection means between the pull-tab and the valve opens said valve simultaneously with the opening of the container resulting in a rapid cooling of the container contents.

3,759,061

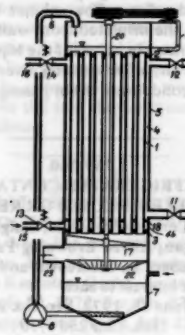
TUBE ICE GENERATOR

Nils Edvin Folke Nilsson, and Jimmie Arne Eurenius, both of Norrkoping, Sweden, assignors to STAL Refrigeration AB, Norrkoping, Sweden

Filed Sept. 7, 1971, Ser. No. 178,029
Int. Cl. F25c 5/10
U.S. Cl. 62—352 **3 Claims**

Ice generator in which water is frozen in tubes extending vertically within a surrounding casing defining a freezing

chamber spaced above the bottom of which is a distributor plate having apertures surrounding the tubes and defining a



separate chamber into which a warm gas is passed to heat the tubes to cause the ice rods to slide therefrom.

3,759,062

RECEIVER DRIER HOUSING FOR AUTOMOBILE AIR CONDITIONING SYSTEMS

George T. Wrenn, Crittenden, and H. William Mann, Portsmouth, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed Aug. 14, 1972, Ser. No. 280,311
Int. Cl. F25b *43/00*
U.S. Cl. 62—474 15 Claims

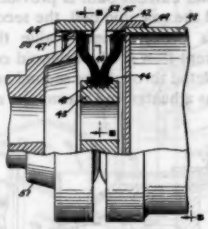
Air conditioning and refrigeration systems, particularly a precharged receiver drier housing, including a valve connector port at the top fittable with a conventional air conditioning or refrigeration system so as to charge the system with a refrigerant gas. The housing includes an axially depressible induction tube extending from the connector port beneath a molecular sieve positioned within the housing. The unit is activated or deactivated with respect to the air conditioning system by simply turning a valve in the connector port. This valve enables convenient and money-saving retention of the refrigeration charge in the air conditioning system, while the filter drier is being replaced and, therefore, has particular application in automobile air conditioning systems.

3,759,063

LAMINATED DIAPHRAGM COUPLINGS

Wilfrid H. Bendall, 19 N. Broad St., Pawcatuck, Conn.

Filed Oct. 28, 1971, Ser. No. 193,352
Int. Cl. F16d *3/78*
U.S. Cl. 64—11 R 10 Claims



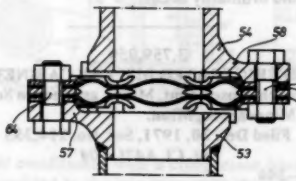
A laminated diaphragm coupling for drive shafts having a plurality of identically corrugated annular laminas flexibly conformable to a common center of corrugation curvature. The laminas assemble in coaxial interlaminary supporting contact to provide a torsionally stiff and axially flexible laminated diaphragm. The diaphragms have inner and outer circumferential edge portions adapted for interconnection with each other and with coupling members.

3,759,064

COMPOSITE FLEXIBLE COUPLING FOR INTERCONNECTING TWO SHAFTS

Raoul Jorn, D-8992 Hengnau, and Peter Reichardt, Grasinger Rain 4, D-7012 Fellbach

Filed Sept. 10, 1971, Ser. No. 179,444
Int. Cl. F16d *3/78*
U.S. Cl. 64—13 6 Claims



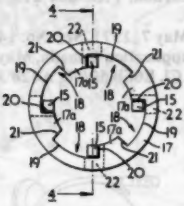
A flexible coupling comprises at least two metallic rings of polygonal outline whose corners all are coplanar and alternately connected to the opposite shafts and whose sides are curved (bowed) at least partially out of the plane of the corners, the other corners being connected together. An elastomer such as rubber can be bonded between the two rings at the sides and rigid spacers are provided at the corners between the rings. Clamping bodies overlie the rings at the corners and, like the spacers, have edges running transverse to the longitudinal axes of the respective sides which are rounded for best bending of the sides. The rings can be S-shaped at their sides or the sides can arch away from each other while being of reduced width in the central regions of the sides. In addition each ring can be made of a plurality of side members joined to the neighboring side members at the corners.

3,759,065

KEYED JOINT

Herbert Ralph Montefiore, deceased, late of "Clifton," Station Rd., West Horndon, Essex, and by National Westminster Bank, Limited, executor, 41 Lothbury, London, both of England

Filed May 7, 1971, Ser. No. 141,170
Int. Cl. F16d *3/06*
U.S. Cl. 64—23 4 Claims



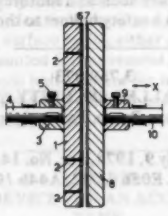
A keyed joint for enabling relative longitudinal movement to take place between a driving and a driven member under high torque loading conditions includes a shaft member and a coaxial sleeve member. A key is formed on one of the members and a keyway on the other member, the key and keyway each having a face transverse to the circumferential direction and spaced apart circumferentially. A plurality of rollers are located between said faces and the faces are profiled to correspond to the contacting surface of the rollers.

3,759,066

ELASTIC POWER TRANSMITTING ELEMENT

Samuel Portnoy, Simtat Beth Habad 9, Hod Hasharon, Israel

Filed Sept. 7, 1971, Ser. No. 178,164
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 S 6 Claims



An elastic power transmitting element comprises at least one disc- or plate-shaped member in which there is cut a spiral slot extending from near the center of the said element towards the periphery thereof, means being provided on the said disc- or plate-shaped member for connection thereof to the driving or driven shaft of a power transmission.

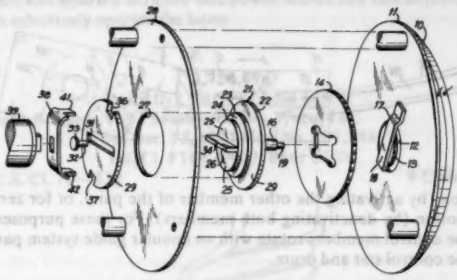
3,759,067

SHAFT COUPLING WITH SLIDING PLATE

Frank W. Perazzella, Wolcott, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,031
Int. Cl. F16d *3/04*
U.S. Cl. 64—31 3 Claims

A shaft coupling to transmit rotation from one shaft to another not co-linear therewith. The coupling comprises a plate which is transverse to one of the shafts and connected thereto, the plate having limited freedom of movement back and forth in one direction transverse to the other shaft, and fitting over a promontory on the one shaft which is disposed within a slot in the plate so as to allow movement only in one direction. A finger on the other shaft intersects grooves in the plate to complete the coupling. A motor connected through a gear train may be used to rotate one of the shafts.

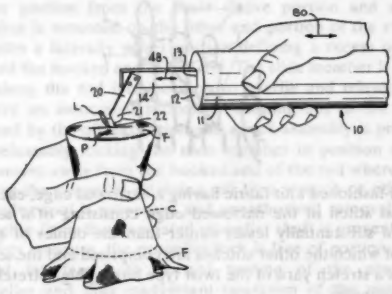


3,759,068

METHOD AND APPARATUS FOR MENDING KNIT FABRIC

Lonnie Reynolds Davenport, Princeton, Ky., assignor to Pair-X, Inc., Princeton, Ky.

Filed Aug. 6, 1971, Ser. No. 169,702
Int. Cl. D04b *35/00*
U.S. Cl. 66—1 16 Claims



Disclosed is a method and apparatus for mending snags and pulls in knit fabrics. The invention is particularly applicable for knit fabrics used in apparel and to light weight fabric with a lock stitch such as "no run" hosiery. A preferred embodiment of the apparatus includes a mending device with a blade member driven in a reciprocal fashion such that the tip of the blade traces a linear or near linear path. A preferred method is disclosed wherein the reciprocating blade tip is applied to a piece of snagged fabric that is stretched over a mending cup. The mending device is maneuvered so that the path traced by the blade tip corresponds to the "pull thread line" formed by the distorted knit stitches until the yarn loop is drawn back into the fabric and the distorted stitches resume their original shape.

3,759,069

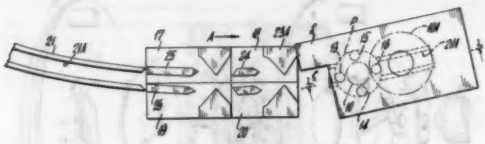
CONTROL APPARATUS FOR THE PATTERN DRUM OF A KNITTING MACHINE

Holger Scheffler, Lichtenstein; Konrad Bannehr, Leukersdorf, and Ingo Ziprian, Gersdorf, all of Germany, assignors to VEB Wirkmaschinenbau, Karl-Marx-Stadt, Germany

Filed Apr. 12, 1972, Ser. No. 243,325
Int. Cl. D04b *9/00*
U.S. Cl. 66—50 B 9 Claims

A pattern drum is intermittently rotated forward or backward, by variable numbers of steps, by a control star rotor

having uniformly spaced pins. A pair of pin engaging control members can be set to control such a pin for forward motion (by activating one member of the pair), or for backward motion (by activating the other member of the pair), or for zero motion (by deactivating both members). For these purposes, the control members rotate with an annular guide system past the control star and drum.



3,759,070

FULL-FASHIONED KNOT FABRIC AND METHOD AND APPARATUS FOR THE PRODUCTION THEREOF

Heinz Mutze, Karl-Marx-Stadt; Gerhard Barth, Dittersdorf, and Kurt Pfuller, Karl-Marx-Stadt, all of Germany, assignors to VEB Wirkmaschinenbau, Karl-Marx-Stadt, Germany

Filed Dec. 28, 1970, Ser. No. 101,929

Claims priority, application Italy, June 15, 1970, 51414 A/70

Int. Cl. D04b *7/00*

U.S. Cl. 66—189 **5 Claims**

Full-fashioned knit fabric having a narrowed edge, each outermost stitch of the narrowed edge consisting of a second yarn of substantially lesser denier than the denier of a first yarn of which the other stitches are comprised and the second yarn is a stretch yarn of the twist type having high stretch and rapid recovery.

3,759,071

SYSTEM FOR DYEING TEXTILES AND THE LIKE

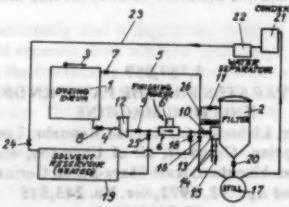
Heinrich Fuhring, Augsburg, and Johannes Helmut Sieber, Aystetten, both of Germany, assignors to Bowe, Bohler & Weber KG, Augsburg, Germany

Filed Sept. 27, 1971, Ser. No. 183,915

Claims priority, application Germany, Sept. 25, 1970, P 20 47 192.5

Int. Cl. D06f *39/10*

U.S. Cl. 68—18 C **7 Claims**



An organic dyeing liquor, circulating hot through a vat filled with textiles to be dyed, is passed in a terminal stage through a cooler in cascade with a filter. As the temperature of the solvent progressively decreases, dyestuff is precipitated in the filter which is positioned close to the cooler, preferably in a common housing. Upon final rinsing with the substantially dyestuff-free solvent, impregnants or other treatment agents may be admixed therewith.

3,759,072

LOCK

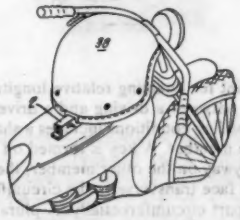
Robert Porter McLarnon, P.O. Box 215, Stittsville, Ontario, Canada

Filed May 7, 1971, Ser. No. 141,285

Claims priority, application Canada, May 15, 1970, 082942

Int. Cl. E05b *69/00*; A42b *3/00*

U.S. Cl. 70—59 **2 Claims**



A locking mechanism for a variety of uses is disclosed. The mechanism consists of a lock housing and one or more flat-bottomed slots in the housing to receive a flange or flanges from an article or articles to be secured to the housing and a key-operated locking shaft reciprocally mounted for movement across each of the slots. The locking mechanism may be used in a manner comparable to a padlock or may be secured to a supporting structure such as a motorcycle and be used to secure articles such as a safety helmet to the motorcycle.

3,759,073

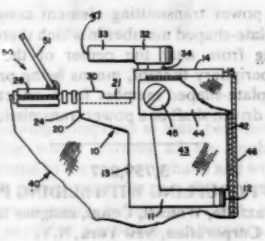
FLEXIBLE WALLED SECURITY CONTAINER

Arnold S. Rifkin, Wilkes-Barre, Pa., assignor to A. Rifkin, Co., Wilkes-Barre, Pa.

Filed July 9, 1971, Ser. No. 145,127

Int. Cl. E05b *65/52*; A44b *19/30*

U.S. Cl. 70—68 **3 Claims**



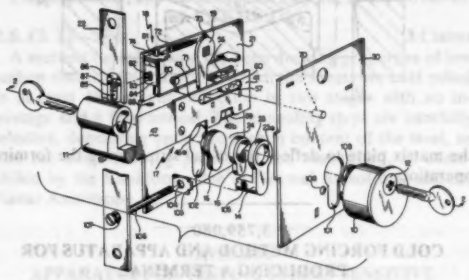
A flexible walled security container having an opening provided with slide fastener means along the edges of the opening and locking means carried by the container in position to releasably retain the slider of the slide fastener means in position closing the container.

3,759,074

LOCKING MECHANISM HAVING KEY OPERATION ON TWO SIDES

Herman Prahl, 48-38 58th Ln., Woodside, N.Y.

Filed Sept. 22, 1971, Ser. No. 182,590
Int. Cl. E05b *63/14*
U.S. Cl. 70—143 12 Claims



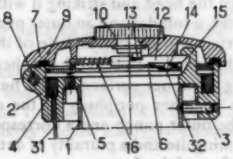
A locking mechanism operable by a key from either of two sides thereof is disclosed having two cylindrical housings operatively connected by a bridge whereby a U-shaped space is formed between the cylindrical housings. Each of the cylindrical housings contains a key plug of the tumbler type. The key plugs extend into the U-shaped space where fingers are mounted thereon for operation of a bolt element. The bolt element is slideably mounted between a pair of parallel assembly plates which have aligned apertures therein of the same configuration as one of the cylindrical housings so that the cylindrical housing may be passed through said apertures to position the U-shaped space between the plates. The bolt element is formed of a pair of parallel bolt plates operatively connected together at its internal end and having a solid portion with a strike camming surface connected at its opposite end for cooperation with a door frame. The solid portion is connected to the bolt plates of the bolt element on each side thereof by oppositely and symetrically positioned screws to enable the solid portion to be mounted to the bolt plates with its strike camming surface facing either direction. A pin structured keeper is mounted for movement transverse to the sliding movement of said bolt element for insertion into a bore in the solid portion of the bolt element and thereby maintain the bolt element in a retracted position.

3,759,075

PROTECTING DEVICE FOR AN ACCESS ORIFICE TO A TANK

Paul Lipschutz, Croissy sur Seine, France, assignor to Societe d'Exploitation des Brevets NEIMAN, Neuilly-sur-Seine, France

Filed July 13, 1971, Ser. No. 162,080
Claims priority, application France, July 15, 1970, 7025920; Mar. 2, 1971, 7107053
Int. Cl. B65d *55/14*; B60r *25/00*
U.S. Cl. 70—159 14 Claims



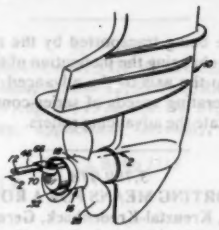
A protecting device for an access orifice to a fuel tank of an automotive vehicle with a heat engine, a driver's station and a power source, said device comprising a movable cover to be locked in closed position, an actuator for unlocking said cover and connected to said power source and manual means for remote-controlling said actuator, located in the driver's station and inserted between said power source and said actuator to selectively operate the latter.

3,759,076

MARINE PROPELLER LOCK

John B. Reese, 1033 Southwood Dr., Waco, Tex.

Filed Dec. 13, 1971, Ser. No. 207,344
Int. Cl. F16b *41/00*; B60r *25/00*
U.S. Cl. 70—232 9 Claims



An elongated bar for lengthwise insertion longitudinally between the inner and outer sleeve portions of a marine propeller. The bar includes hook structure on the end to be inserted between the sleeve portions for hooked engagement with one of the generally radial lugs supporting the outer sleeve portion from the inner sleeve portion and a slide member is mounted on the other end portion of the rod and includes a laterally offset portion defining a recess opening toward the hooked end of the rod. The slide member is slideable along the rod into position to overlie and telescopingly receive an associated propeller retaining nut in the recess defined by the offset portion and a lock assembly is provided for releasably locking the slide member in position against movement away from the hooked end of the rod whereby access to the propeller retaining nut by a wrench or other nut removing tool is prevented and unauthorized removal of the propeller from the associated propeller shaft is prevented. As a safety measure, the propeller lock is free of portions which would interfere with normal turning of the associated propeller and thus inadvertent operation of the associated motor without first removing the propeller lock will not cause damage to the propeller or other associated running gear even though a turning propeller having the propeller lock mounted thereon will cause an apparent vibration so as to immediately remind a person who has inadvertently started the associated motor that the propeller lock has not been removed.

3,759,077

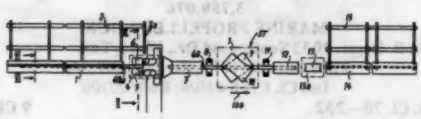
METHOD AND APPARATUS FOR FEEDING ELONGATED ROTARY WORKPIECES IN STRAIGHTENING MACHINES OR THE LIKE

Heinz Hartkopf, Solingen, Germany, assignor to TH. Kieserling & Albrecht, Solingen, Germany

Filed Oct. 14, 1971, Ser. No. 189,213
Claims priority, application Germany, Oct. 17, 1970, P 20 51 087.6
Int. Cl. B21d *3/02*
U.S. Cl. 72—99 20 Claims

A straightening machine for tubular or rod-like workpieces has concave straightening rolls which treat successive workpieces while such workpieces move lengthwise and rotate about their own axes. The feeding unit which advances workpieces into the range of the straightening rolls employs a pair of driven concave advancing rollers whose axes are inclined with reference to the axis of a workpiece between their concave surfaces. The advancing rollers can move successive workpieces at a higher speed so that the leading end of the

workpiece between the advancing rollers catches up with the trailing end of the preceding workpiece which is being treated by the straightening rolls, and thereupon at a lower speed which corresponds to the speed of lengthwise transport of the workpiece at the straightening station. The speed of work-



pieces which are being transported by the advancing rollers can be varied by changing the inclination of the axes of rollers with reference to the axis of the advanced workpiece or by changing the operating speeds of series-connected hydraulic motors which rotate the advancing rollers.

3,759,078

ROLL SUPPORTING MEANS FOR A ROLLING MILL

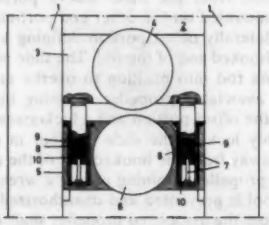
Friedrich Rotter, Kreuztal-Kredenback, Germany, assignor to Siemag Siegener Maschinenbau, G.m.b.H.

Filed May 30, 1972, Ser. No. 257,507

Claims priority, application Germany, June 26, 1971, P 21 31 882.1

Int. Cl. B21b *31/08*

U.S. Cl. 72—238 **7 Claims**



The disclosure pertains to a rolling mill having balance piston cylinder assemblies arranged in the lower work roll bearing chocks and extending towards and engaging the cooperative bearing chocks of the upper work roll. A supporting pressure for the piston cylinder assemblies is generated by hydrostatic compression of elastomers, self-contained within the cylinders, which material has a prestressed pressure larger than the combined weights of the upper work roll and its chocks which it is designed to support during roll changing of the rolls.

3,759,079

PUNCHING AND FORMING TOOL WITH STRAIGHTENING FACILITY FOR METAL STRIP

Edmund Nowak, Warszawa, Poland, assignor to Zaklad Doswiadczalny Pras Automatycznych HYDOMAT przy Zakladach Mechanicznych "Tarnow", Warszawa, Poland

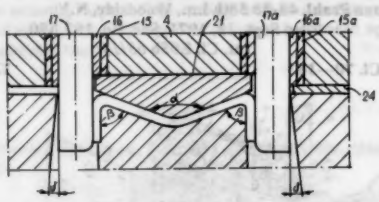
Filed June 7, 1971, Ser. No. 150,578

Claims priority, application Poland, June 13, 1970, 141338

Int. Cl. B21d *31/02*

U.S. Cl. 72—330 **2 Claims**

A tool for the punching and forming of a metal strip while simultaneously straightening same under elevated pressure, comprises a pressure plate adapted to urge the metal strip against a matrix plate under hydraulic pressure and forming a guide for a plurality of punches displaceable by advance of the member carrying the hydraulic devices toward the matrix plate. Springs between the matrix plate and the guide plate urge the latter in the opposite direction. The pressure-guide plate is provided with an insert cooperating with a recess in



the matrix plate to deflect the metal strip during the forming operation.

3,759,080

COLD FORCING METHOD AND APPARATUS FOR PRODUCING A TERMINAL

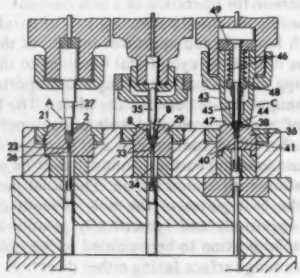
Norio Sugahara, Oogaki-City, and Tomiji Oguri, Seto-City, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Pref., Japan

Filed June 12, 1972, Ser. No. 261,771

Claims priority, application Japan, June 14, 1971, 46/42410

Int. Cl. B21k *21/00*

U.S. Cl. 72—356 **2 Claims**



A cold forging method and apparatus for producing a terminal comprising the steps of:

A first process for feeding a cylindrical blank material into a swaging die and swaging said cylindrical blank material with a first punch to form an enlarged head portion having a shallow recess and a center projection respectively above and below a middle portion maintaining the original outer diameter of the blank material; a second process for feeding an intermediate product obtained in the first process into a pre-pressing die and deeply driving a second punch into the center of said recess in said enlarged head to extrude the material backward increasing its axial length thereby to form a deep center hole which substantially corresponds in diameter with the outer diameter of said second punch; and a third process for feeding an intermediate product obtained in the second process into a forming die except the head and striking it with a third punch comprising a center, a tubular and an outer punch, said center punch being inserted into the center hole of the intermediate product to hold the inner peripheral shape thereof, said tubular punch striking an upper surface of the head, to form, in cooperation with an inner periphery of the outer punch, a flange between the outer punch and a corresponding contact surface of the forming die and a plurality of detent projections on the bottom surface of the flange.

In the cold forging method according to the present invention, the terminal can be manufactured with the same accuracy as that of the cut products in the prior art without causing any waste of the material and the production cost can be reduced remarkably.

3,759,081

METHOD OF MANUFACTURING STEEL PLATES FOR EXTRA DEEP DRAWING

Kazuo Matsudo, and Takayoshi Shimomura, Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1970, Ser. No. 55,862
Claims priority, application Japan, July 28, 1969, 44/58949
Int. Cl. B21b *3/00*
U.S. Cl. 72—364 **3 Claims**

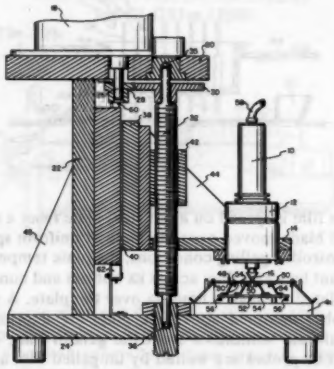
A method for improving the deep drawing properties of low carbon rimmed steel sheets in which the sheets are cold rolled to at least 80 percent reduction in two stages with an interstage and a final anneal. The annealing steps are carefully selected, depending upon the carbon content of the steel, so that the deep drawing properties are maximized, as exemplified by the Rankford value or Normal Anisotropy and the Planar Anisotropy.

3,759,082

APPARATUS FOR TESTING STRESS-SENSITIVE SEMICONDUCTOR TRANSDUCER

Joseph Charles Provenzano, Glenview; David F. Hiestand, Lombard, and James A. Krabec, Chicago, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 20, 1972, Ser. No. 219,352
Int. Cl. G01l *25/00*
U.S. Cl. 73—1 B **10 Claims**



A motor driven force transducer applies stress at a selected rate to a substrate bearing a stress-sensitive test specimen. The analog electrical outputs of the specimen under test and the force transducer are converted to digital form for correlation by a computer.

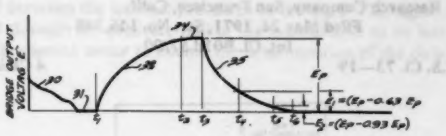
3,759,083

SENSING ELEMENT RESPONSE TIME MEASURING SYSTEM

Gerald L. Erickson, Rutland, Wash.; David A. Jaszkowiak, Star, Idaho, and Joseph E. Kaveckis, Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 19, 1972, Ser. No. 245,337
Int. Cl. G01k *15/00*
U.S. Cl. 73—1 F **7 Claims**

A resistance temperature detector, which is one arm of a bridge circuit, is heated by an electric current separate from the bridge exciting current, to a temperature higher than its environmental temperature. The time required for the RTD to cool through a predetermined temperature range after the heating current is removed is measured to determine the response time of the RTD.

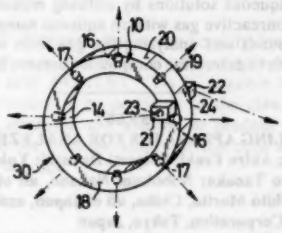


3,759,084

HEADLAMPS OF VEHICLES

Anna B. Plewka, Hauptstrasse 12, Kettwig/Ruhr, Germany

Filed Aug. 27, 1970, Ser. No. 67,552
Claims priority, application Germany, Aug. 28, 1969, P 19 43 640.9
Int. Cl. B60q *1/18*
U.S. Cl. 240—7.1 R **5 Claims**



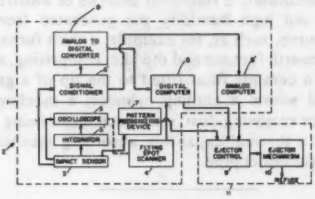
Headlights particularly for motor vehicles in which a supplemental light or lights is provided around the headlight and adjacent thereto so that the beams of light therefrom will be projected in directions other than the rays which are projected from the main headlight.

3,759,085

IMPACT SENSOR AND CODER APPARATUS

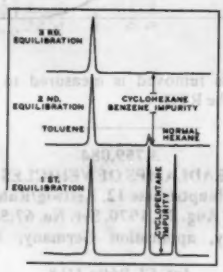
David G. Wilson, Cambridge, Mass., and Ora E. Smith, Cincinnati, Ohio, assignors to Massachusettes Institute of Technology, Cambridge, Mass.

Filed Mar. 4, 1971, Ser. No. 120,857
Int. Cl. G01n *3/08*
U.S. Cl. 73—12 **8 Claims**



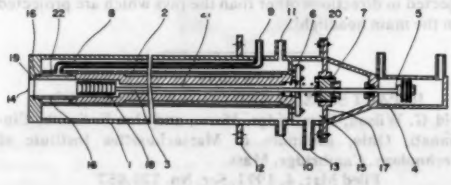
Impact sensor and coder apparatus for use in a materials-sorting system. The embodiment described in greatest detail includes a movable rigid body adapted to strike individual pieces of the materials. An accelerometer associated with the rigid body measures the rate of deceleration of the rigid body, as a function of time, in terms of a voltage signal waveform. The waveform thus derived is compared with a group of typical waveforms to determine which of the waveforms of the group conforms most closely to that of the sample, thereby to identify the sample.

3,759,086
ANALYSIS METHOD
Clayton D. McAuliffe, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed May 24, 1971, Ser. No. 146,348
Int. Cl. B01d 57/00
U.S. Cl. 73—19 4 Claims



A method is provided for determining the presence of compounds in aqueous solutions by utilizing repeated equilibrations of a nonreactive gas with an aqueous sample containing such compounds and analyzing the gas from such repeated equilibrations to determine compounds present in the liquid.

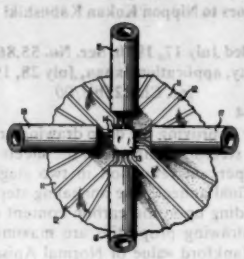
3,759,087
SAMPLING APPARATUS FOR ANALYZING GAS
Norito Iwao; Akira Ezaki; Shigemi Hayashi; Yukio Nakamori; Keihachiro Tanaka; Nobukuni Nakano, all of Kitakyushu, and Toshihito Morita, Chiba, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Apr. 8, 1971, Ser. No. 132,484
Int. Cl. G01n 1/00
U.S. Cl. 73—23 6 Claims



A gas sampling apparatus, which is a high temperature dry sampling apparatus, which makes it possible to carry out quickly and accurately a stabilized analysis of dust-rich, high temperature and high humidity gas generated from a gas generating source, such as, for example, a shaft furnace, converter, open-hearth furnace and the like, comprising, as a typical example, a ceramic filter fitted to the tip of a gas outlet pipe provided within a cooling cylinder, a mechanism for blowing gas for removing dust, said mechanism being set near the filter and a thermal expansion absorbing mechanism installed in the gas outlet pipe.

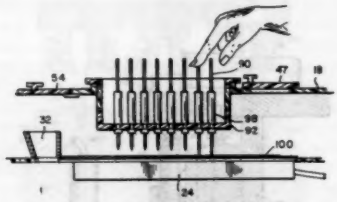
3,759,088
METHOD OF AND APPARATUS FOR TESTING THE QUALITY OF BONDED CONNECTIONS OF SEMICONDUCTOR DEVICES
Nathan Everette Hardwick, III, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed June 2, 1972, Ser. No. 259,272
Int. Cl. G01m 3/02
U.S. Cl. 73—37 2 Claims

An apparatus is disclosed for the nondestructive testing of the integrity of a semiconductor device of the beam lead or flip chip type after it has been bonded to a mounting substrate. The apparatus comprises an air blast tester having at least two opposed air ducts to produce impinging fluid jets beneath the



bonded chip. The opposed impinging jets result in a pressure buildup because of the deceleration of flow thereby resulting in a force on the underside of the semiconductor chip.

3,759,089
TEST METHOD FOR FILM-FORMING MATERIALS
Moustafa M. Sharabash, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Oct. 26, 1971, Ser. No. 192,013
Int. Cl. G01n 19/04
U.S. Cl. 73—64.1 12 Claims

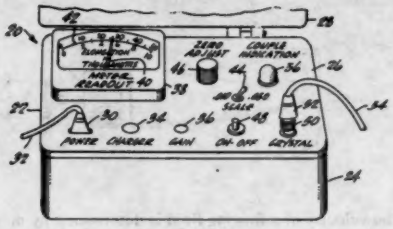


A gelatin film is spread on a flat steel plate from a spreader bucket and blade moved over the plate at uniform speed. To provide controlled gelling conditions, the plate temperature is held constant by water flow across its bottom and conditioned air is circulated through a housing over the plate. A plurality of test probes mounted above the plate are depressed into contact with and withdrawn from the gelatin film, in timed sequence. The probes are wetted by un-gelled film and draw strands therefrom which remain connected to the probes, whereas the probes do not draw strands from gelled film but form dimples therein. The strands and dimples may be retained as a record, and gelation time is accurately determined by observing either or both of when the successively depressed probes cease to draw strands or start to form dimples. Strand thickness and dimple size varies at different stages to reveal gelation characteristics.

3,759,090
ULTRASONIC EXTENSOMETER
Howard J. McFaul, Westminster; Donald C. Erdman, and Evan B. Friedmann, both of Pasadena, all of Calif., assignors to McDonnell Douglas and Donald C. Erdman Co., a part interest to each
Filed Feb. 22, 1971, Ser. No. 117,635
Int. Cl. G01n 29/00
U.S. Cl. 73—67.6 20 Claims

An ultrasonic extensometer for measuring the elongation of a bolt or the like being tightened against structure which it fastens, the extensometer including a transducer magnetically coupled to one end of the bolt, a pulser/receiver for generating a periodic pulse signal which energizes the transducer that is subsequently energized by the echo pulse from the far end

of the bolt to provide an echo signal which is received and amplified, indicating circuit means for detecting and providing a correct couple indication between the transducer and its associated bolt end, and measuring circuit means for displaying a variable duration meter signal responsively produced by the amplified echo signal and controlled in duration by a vernier



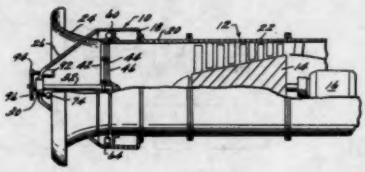
signal responsively produced by the pulse signal after a predetermined delay which is adjustable to index the vernier signal a desired amount with respect to the meter signal so that when the bolt has been elongated the proper amount, the amplified echo signal then coincides with the indexing vernier signal and the duration of the meter signal is reduced to zero.

3,759,091

ENGINE INLET DISTORTION TESTING APPARATUS

Robert M. Reimer, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed July 2, 1971, Ser. No. 159,393
Int. Cl. G01m 15/00
U.S. Cl. 73—116 **7 Claims**



Apparatus is disclosed for testing the capability of a compressor or gas turbine engine to operate under conditions where the normal, generally uniform pressure distribution of the inlet is distorted by pressure gradients as may be encountered in aircraft maneuvers. Three discs are provided in a simulated engine inlet. All of the discs have equispaced, registerable apertures. The middle disc comprises inner and outer sectors which are angularly adjustable to control the extent to which their apertures are registered with the apertures of the immediately adjacent downstream disc and thus the degree and location of distortion. The upstream disc is rotatable to provide dynamic pressure distortion patterns. The upstream disc is adjustable toward and away from the other discs to vary the severity of the dynamic distortions.

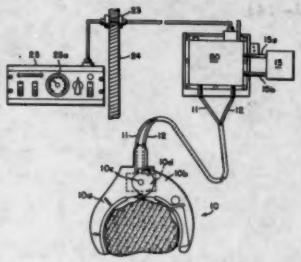
3,759,092

DIFFERENTIAL PRESSURE TRANSDUCER AND READOUT FOR SENSING CLAW GRIP FORCE

Kenneth R. Fishel, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 9, 1971, Ser. No. 151,336
Int. Cl. G01l 1/02
U.S. Cl. 73—141 **3 Claims**

A submersible having an externally mounted hydraulic system is provided with a differential pressure transducer connected between the supply and return lines which articulate a remotely disposed claw. The transducer is responsive to produce a signal representative of the pressure differential between the internal pressures in the lines. This signal is fed through the pressure hull of the submersible to an internally carried meter to enable the determination of the claw's



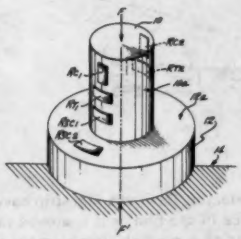
gripping force. Although the meter actually "reads" differential pressure, it is calibrated in units of grip force, in this case, pounds (OF FORCE). This is possible because the differential pressure is proportional to the claw grip force. Being thusly arranged, the sensing or readout devices are removed from the near proximity of the claw and are less vulnerable to damage.

3,759,093

LINEAR LOAD CELL BRIDGE INCLUDING A NON-LINEAR STRAIN SENSITIVE ELEMENT

Emory W. Farr, 830 Del Cerro Ave., West Covina, Calif.

Filed Nov. 10, 1971, Ser. No. 197,413
Int. Cl. G01l 5/18
U.S. Cl. 73—141 A **8 Claims**



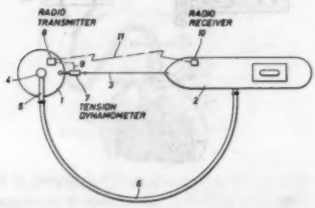
To compensate for non-linearities in a bridge circuit comprising a plurality of strain gauge transducers arranged to provide an output signal proportional to the load on a member, a non-linear strain sensitive element is mounted in the area of the member sensitive to load strain and electrically connected in series in one arm of the bridge. A matching non-linear strain sensitive element is mounted in an area of the member not sensitive to load strain and is connected in an adjacent arm of the bridge to compensate for temperature-dependent non-linearities.

3,759,094

METHOD FOR MONITORING THE FORCES IN THE MOORING CABLE OF A SINGLE-POINT MOORING SYSTEM

Jan J. Al, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed June 29, 1971, Ser. No. 157,837
Claims priority, application Netherlands, July 10, 1970, 7010213
Int. Cl. G01l 5/10
U.S. Cl. 73—143 3 Claims



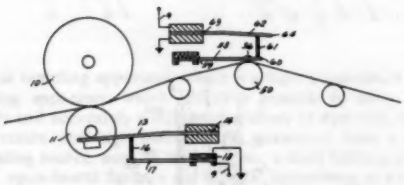
A system for monitoring the force in a mooring cable of a single-point mooring system and transmitting from the single-point mooring system to a ship moored thereto a signal related to the measured force whereby said ship can disconnect from said single-point mooring system when said signal exceeds a preset maximum value.

3,759,095

STRIP DETECTION APPARATUS

Ray L. Short, Jr., Glenview; Howard Bowen, Wilmette, and David L. Henderson, Mundelein, all of Ill., assignors to Research Technology Incorporated, Skokie, Ill.

Filed July 16, 1971, Ser. No. 163,243
Int. Cl. G01n 3/20
U.S. Cl. 73—157 12 Claims



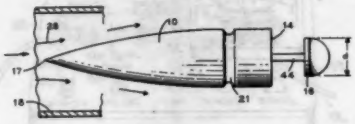
A device for detecting flaws in a film strip having a feeler for sensing the surface of the film as it is moved rapidly through the device and using a piezoelectric element in response to movement of the feeler for generating a pulse whenever a flaw is detected in the film. The circuit which couples the electrical signal from the piezoelectric crystal to a utilization point such as a counter, includes a capacitor having a value of capacitance which is designed to block gradually changing electrical signals from the piezoelectric element and to pass signals which change rapidly. In this way gradual changes in thickness in the film do not produce a readable output signal, while cracks in the edge of the film or damaged sprocket holes or tape splices will generate a sudden output signal which may be read as a flaw in the film.

3,759,096

MEASURING THE VELOCITY OF A FLOWING FLUID

Douglas F. White, Bedminster, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,709
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 12 Claims



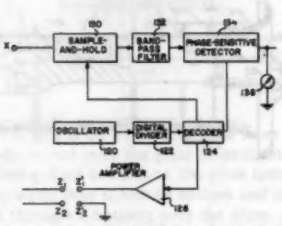
The velocity of a flowing fluid is determined by means of a device which includes an upstream cylindrical member and a downstream disc-like member spaced from the cylindrical member by a predetermined distance. Oscillations are produced in the fluid which passes around the cylindrical and disc structures and the frequency of the oscillations is measured. The cylindrical member when a streamlined nose is employed can have a diameter on the order of less than ½ inch by providing the cylindrical member with an annular discontinuity, such as a ring.

3,759,097

ELECTROMAGNETIC WATER CURRENT METER

Vincent J. Cushing, 9804 Hillridge Dr., Kensington, Md.

Filed Sept. 1, 1970, Ser. No. 68,674
Int. Cl. G01p 5/08
U.S. Cl. 73—194 EM 18 Claims



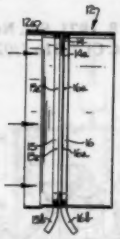
A body means of electrically non-conductive material supports at least one pair of electrically conductive detecting electrodes disposed at opposite portions of the body means. Means is supported within the body means between the electrodes for producing an alternating magnetic field. An electrical circuit is connected to the detecting electrodes and includes indicating means. In one form of the invention, electrically conductive guard means is disposed adjacent the electrodes and means is provided for establishing a potential on the guard means which is directly proportional to the potential on the detecting electrodes. In another form of the invention, means is provided for driving the electomagnet to produce an alternating magnetic field at a predetermined frequency wherein the magnetic field is driven to a finite value for a predetermined time interval during each cycle, and the electrical circuit includes means for measuring the signal from the detecting electrodes during a time delayed portion of said time interval. In a further form of the invention, pairs of oppositely disposed detecting electrodes are provided at right angles to one another so as to indicate the direction of water current flow. In each form of the invention, shield means is preferably employed in the form of electrically conductive material disposed between the detecting electrodes and the means for producing the magnetic field.

3,759,098

APPARATUS FOR DETERMINING FLUID FLOW IN A CONDUIT

Hillard Glenn Logsdon, and Ernest August Werder, both of Charlotte, N.C., assignors to Aeronca, Inc., Pineville, N.C.

Filed Jan. 27, 1972, Ser. No. 221,186
Int. Cl. G01f 1/00
U.S. Cl. 73—205 R 10 Claims



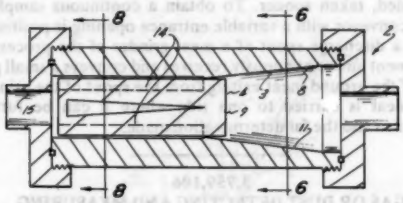
An open-ended housing is adapted to be communicatively connected to a conduit for receiving fluid flowing therethrough, and has a plate means defining an orifice within the housing for restricting the flow of fluid therethrough, with novel sensing means so arranged on opposite sides of the orifice as to sense relatively high static pressure at a plurality of points upstream of the orifice and to sense sub-atmospheric static pressure at a plurality of points downstream of the orifice, and a pressure responsive means is operatively connected to the sensing means for determining the differential pressure on opposite sides of the orifice.

3,759,099

FLOWMETER

Rob Roy McGregor, 2951 Henesy, Imlay City, Mich.

Filed Apr. 3, 1972, Ser. No. 240,560
Int. Cl. G01l 3/26
U.S. Cl. 73—207 2 Claims



This invention relates to a flowmeter of particular structure providing immediate continuous indication of rate of fluid flow in a conduit by utilizing in the path of fluid flow a particular float structure the variable position of which directly corresponds to the variable rate of fluid flow, which variable position is immediately continuously indicated by a particularly arranged light source, a light sensor, and a readout device with necessary electrical circuitry.

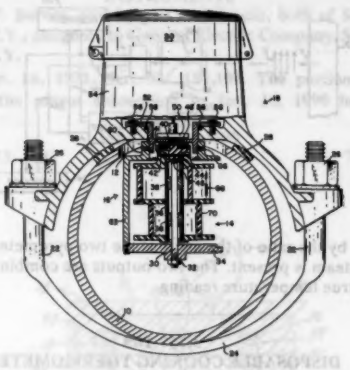
3,759,100

FLOWMETER

William J. Medwig, Pittsburgh, and Ronald N. Koch, Allison Park, both of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed July 15, 1971, Ser. No. 162,949
Int. Cl. G01f 1/08
U.S. Cl. 73—230 15 Claims

An in-line magnetic drive flowmeter comprising a meter and housing, an impeller insertable through the wall of a pipeline, and a saddle assembly to mount the meter in the pipeline. The meter is particularly characterized by calibration means involving rotation of a housing about the impeller



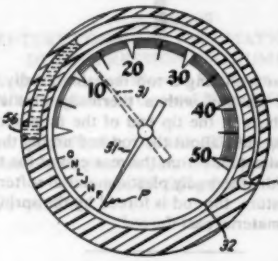
only, the housing having a unique tapered slot calibration opening and a stacked set of rotor elements comprising the meter impeller.

3,759,101

COMBINED DEPTH GAUGE AND PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENT

Marcus P. Borom, and Lyman A. Johnson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,096. The portion of the term of the patent subsequent to Jan. 16, 1990, has been disclaimed.
Int. Cl. G01f 23/14; G06g 5/00
U.S. Cl. 73—291 6 Claims



In this computer for calculating and indicating safe minimum-duration decompression schedules, a porous body serves the double purpose of supporting the gas diffusion membrane and providing a substantially constant gas chamber. Additionally, the immersible housing of the instrument has an integrally-formed depth gauge in the form of an arcuate rib portion having a tapered axial bore open only at its larger end. A single instrument dial serves both the computer gauge and the depth gauge in this coordinated assembly.

3,759,102

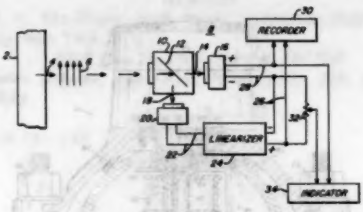
APPARATUS FOR DETERMINING CORRECT PYROMETER READINGS WITH STEAM INTERFERENCE PRESENT

Thomas P. Murray, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 25, 1971, Ser. No. 127,900
Int. Cl. G01j 5/06, 5/10, 5/60
U.S. Cl. 73—355 R 10 Claims

Apparatus for determining correct pyrometer readings with steam interference present uses a silicon cell pyrometer and a total-radiation pyrometer to measure surface temperature of a

steel slab at hot-rolling temperature. The output of the silicon cell is linearized as a multiple of the total-radiation pyrometer



output by the ratio of the error of the two pyrometer readings when steam is present. The two outputs are combined to provide a true temperature reading.

3,759,103

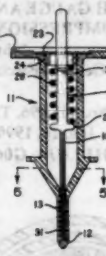
DISPOSABLE COOKING THERMOMETER

Anthony J. Volk, 173 E. Syracuse St., Turlock, Calif.

Filed Mar. 1, 1971, Ser. No. 122,604

Int. Cl. G01k *1/08*

U.S. Cl. 73—358 **5 Claims**



A thermometer including a rod movable axially of a tube having a closed tip end with a thermally plastic material disposed in the bore in the tip end of the tube and a spring compressed in the tube about the rod and urging the rod into the tube. The rod extends from the rear end of the tube as an indicator and as the thermally plastic material softens with increasing temperature, the rod is forced by the spring into the bore to squeeze material past the rod.

3,759,104

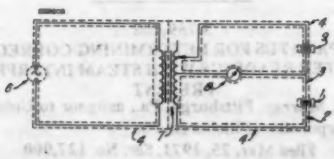
CAPACITANCE THERMOMETER

Max C. Robinson, 1270 Quenneville No. 116, Montreal, Quebec, Canada

Continuation of Ser. No. 44,431, June 8, 1970. This application Mar. 9, 1972, Ser. No. 233,372

Int. Cl. G01k *7/34*

U.S. Cl. 73—362 R **5 Claims**



A thermometer having a sensor formed by a three-terminal capacitor with a suitable temperature-sensitive dielectric interposed between the sensing electrodes, with the sensor being connected to a suitable measuring means, such as a transformer bridge, capable of measuring the direct capacitance of a three-terminal capacitor.

3,759,105

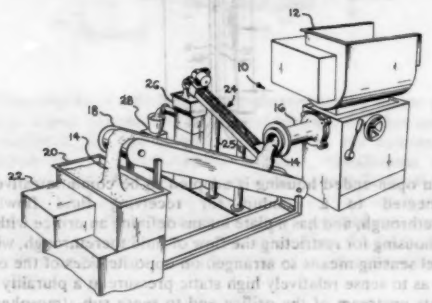
METHOD AND APPARATUS FOR SAMPLING GROUND MEAT

Charles H. Wallace, Carrollton, Va., and Frank L. Smith, Toledo, Ohio, assignors to Huss Equipment Corporation, Toledo, Ohio

Filed June 18, 1971, Ser. No. 154,443

Int. Cl. G01n *1/02*

U.S. Cl. 73—421 A **10 Claims**



This invention relates to a method and apparatus for continuously sampling a ground meat product. Government restrictions on fat content in ground meat now necessitate more frequent sampling of the ground meat product at the processing plant. Heretofore, such samples have been taken periodically from the meat being processed and tested in a fat analyzer. The present invention continuously takes a sample portion of meat from the meat processing equipment and continuously conveys it to the fat analyzing equipment. By obtaining a continuous sample of the ground meat, a more accurate or representative analysis can be obtained. Further, less labor is involved in obtaining and analyzing the samples. The analyses can also be made more rapidly and corrective action, if needed, taken sooner. To obtain a continuous sample, a small conveyor with a variable entrance opening is positioned under a discharge spout of a meat grinder of the processing equipment and continuously receives and conveys a small portion of the ground meat exiting from the spout of the grinder. This meat is carried to one side where it can be further processed and the fat determination made.

3,759,106

GAS OR DUST DETECTING AND MEASURING APPARATUS

Karl-August Wachter, Lubeck, and Horst Rabenecker, Bad Schwartau, both of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed Sept. 8, 1972, Ser. No. 287,220

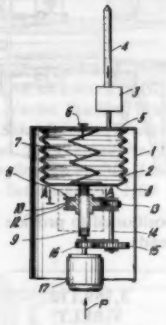
Claims priority, application Germany, Sept. 16, 1971, P 21 46 248.6

Int. Cl. G01n *1/24*

U.S. Cl. 73—421.5 R **10 Claims**

The apparatus includes a bellows pump for drawing in a sample to be analyzed, with the pump having a movable part and being expanded by spring bias, during a working stroke, and collapsed, by a mechanical drive, during a return stroke. The mechanical drive is a continuously driven spindle drive including a driving motor. The spindle drive is automatically coupled to the movable part of the pump responsive to termination of the working stroke thereof, and is automatically uncoupled from the movable part of the pump responsive to the termination of the return stroke. In one embodiment of the invention, the spindle drive includes a stationary threaded spindle secured to the movable pump part and a split nut

rotatable by the motor and movable into and out of threaded engagement with the spindle. A toggle or tilting lever mechanism effects engagement and disengagement of the split nut with the stationary spindle. In a second embodiment, the motor drives two rotatable threaded spindles having their axes



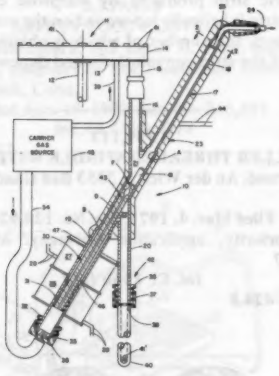
in spaced parallel relation, and a connecting bar, having threads at each end, is connected to the movable part of the pump and is swung into and out of threaded engagement with the two spindles. The third embodiment also has two rotatable threaded spindles driven by the motor but cooperable with a split nut in the same manner as in the first embodiment.

3,759,107

BALLISTIC INJECTION FOR GAS CHROMATOGRAPHY

Stewart A. Fox, Lyons, and Robert J. Magill, Barrington, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 5, 1972, Ser. No. 295,257
Int. Cl. G01n *31/38*
U.S. Cl. 73—422 GC **7 Claims**



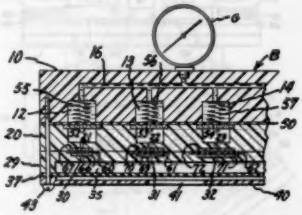
An automatic sample injector for injecting discrete samples of a heat expansible material into a gas chromatographic unit. Sample capsules are successively conducted to a capsule ram which forces the capsules up an inclined passageway where these capsules are heated. The sample material expands upon heating, and is carried in vaporized form by a carrier gas to a gas chromatograph. The capsule ram is withdrawn down the inclined passageway past a discharge conduit where the component parts of the sample capsule fall into a collection area.

3,759,108

SINGLE GAUGE MULTI-TIME CONSTANT AND MULTI-TISSUE RATIO AUTOMATIC DECOMPRESSION INSTRUMENTS

Marcus P. Borom, and Lyman A. Johnson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,107. The portion of the term of the patent subsequent to Jan. 16, 1990 has been disclaimed.
Int. Cl. G06g *5/00*
U.S. Cl. 73—432 **7 Claims**



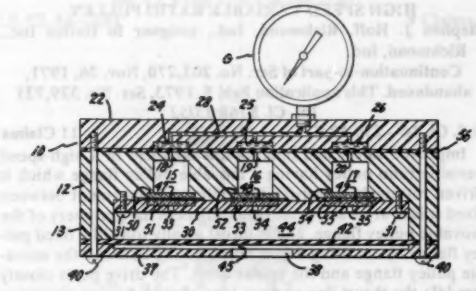
These instruments for guiding a diver's rapid, safe return to the surface have in each instance a single gauge which through an automatic switching feature serves a number of different time-constant gas chambers of the pneumatic analogue computing means and indicates the maximum gas pressure prevailing in the gas chamber array. The instrument also includes a tissue-ratio compensating feature in the form of springs of different appropriate constants situated in the gas chambers.

3,759,109

MULTI-TIME CONSTANT PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENTS

Lyman A. Johnson, and Marcus P. Borom, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,107. The portion of the term of the patent subsequent to Jan. 16, 1990, has been disclaimed.
Int. Cl. G06g *5/00*
U.S. Cl. 73—432 R **8 Claims**

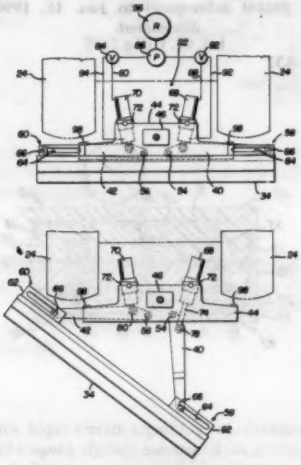


A decompression meter to guide a diver in rapidly and safely returning to the surface is described. It includes as key elements a number of separate semipermeable membranes through which a gas diffuses at different rates in simulation of the uptake and release of nitrogen by a plurality of different time-constant tissues of the diver's body during the hyperbaric exposures of his underwater excursion.

3,759,110
HYDRAULIC ANGLE DOZER

Charles J. Davis, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 10, 1972, Ser. No. 216,366
Int. Cl. F16h *21/44*
U.S. Cl. 74—99 13 Claims



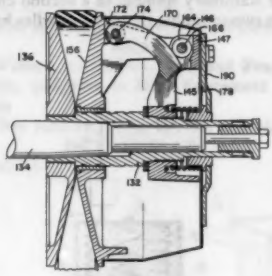
This disclosure relates to an angling mechanism for a bull dozer blade, or the like, which is adapted to extend and angle the dozer blade and is capable of automatically shifting the blade laterally, in the angled position, to provide a blade overhang. The angling mechanism includes a pair of arms which are pivotally supported at one end on the dozer frame for horizontal swinging movement; the opposed ends are attached to the dozer blade by pivotal connections. the dozer blade includes a pair of slots which receive the pivotal connections to the arms and permit angling of the blade and lateral movement as described above. The arms are rotated in the disclosed embodiment by hydraulic cylinders connected to the arms, between the pivotal connections, and the cylinders are operable, independently, to extend the blade in parallel relation to the dozer frame or angle the blade, as described above.

3,759,111
HIGH SPEED VARIABLE RATIO PULLEY

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco Inc., Richmond, Ind.

Continuation-in-part of Ser. No. 202,270, Nov. 26, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,721
Int. Cl. F16h *35/52*
U.S. Cl. 74—230.17 E 11 Claims

Improved safety and operation is obtained in a high-speed variable ratio pulley having a movable pulley flange which is driven rotatively by torque transmitting engagement between fixed spider arms and drive posts adjacent the periphery of the movable pulley flange, and is thrust axially toward a fixed pulley flange by centrifugal cam levers acting between the movable pulley flange and the spider arms. The drive posts closely straddle the thrust line and are long enough to give clearance for the intended flange movement, and their ends are tied together by a tie plate and a ductile bell housing which also engage an outboard bearing to support the posts and movable pulley flange against tilting. Cam movement of the pulley flange is limited, in one case by providing the cam levers with hooked ends which stop their swing at a point short of thrusting the movable pulley flange into forceful abutment with the fixed pulley flange, and in another case by positioning the tie plate to move as a stop against the ends of the spider, substantially on the cam thrust line. For special applications, the

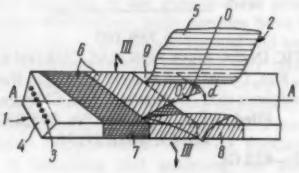


spider is adjustably positioned to provide different cam locations and engaging speeds.

3,759,112
V-BELT

Ivan Vasilievich Polshikov, ulitsa Parkovaya, 10 kv. 5, Kursk; Lev Nikolaevich Kurdin, ulitsa Pervomaiskays 90, kv. 57, and Alexandr Timofeevich Titarenko, Poselok NIIRP2, kv. 77, both of Zagorsk Moskovskoi oblasti, all of U.S.S.R.

Filed Sept. 1, 1971, Ser. No. 177,065
Int. Cl. F16g *5/00*
U.S. Cl. 74—231 1 Claim

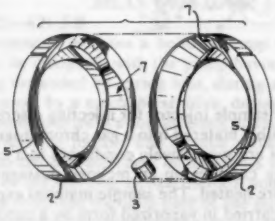


A V-belt, wound on whose core at an angle of 45° is a rubberized fabric strip produced by warpwise cutting of this fabric. The strip is helically lap-wound on the core to form belt covering layers, the number of which is obtained by the displacement of the strip convolutions, and depends on the strip width.

3,759,113
ROLLER THREADED SPINDLE WITH NUT

Friedrich Orend, An der Wick 2, 3353 Bad Gandersheim, Germany

Filed Mar. 4, 1971, Ser. No. 120,920
Claims priority, application Germany, Mar. 4, 1970, P 20 09 984.7
Int. Cl. F16h *1/18*
U.S. Cl. 74—424.8 12 Claims



A threaded spindle which transmits axial thrust to a nut disposed for a relative rotation thereon, through rollers, the

nut having an endless raceway of zero pitch around its inner periphery with the rollers disposed for simultaneous engagement with opposing flanks of the raceway and the screw thread to transmit axial thrust resulting from relative rotation of the screw and nut, the raceway being in the shape of an Archimedean spiral having sufficient clearance at diametrically opposed locations on opposite sides of the screw for the rollers to disengage from and move axially across the crest of the thread of the screw incident to their movement around the raceway.

3,759,114

DOUBLE-LEVER BRAKE CONTROL FOR BICYCLES

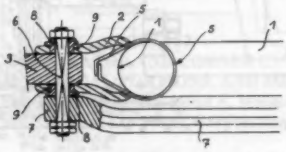
Jean-Marie DeFour, Vertes Feuilles, France, assignor to Angenieux-CIB S.A., Saint-Etienne, France

Filed Jan. 7, 1972, Ser. No. 216,107

Claims priority, application France, Jan. 29, 1971, 7103673

Int. Cl. G05g *11/00*

U.S. Cl. 74—489 **4 Claims**



In this dual control of bicycle brakes the main or racing lever and the auxiliary or sports lever are rigidly interconnected through a common fulcrum pin. The main lever and the auxiliary lever each comprise, in the portion connected to the brake lever fulcrum bracket, a polygonal hole or eye adapted to receive therethrough a fulcrum pin having a matching cross-sectional polygonal contour, so that the levers and pin are rotatably rigid with one another, rings also formed with a corresponding polygonal hole being adapted to be fitted on the fulcrum pin and having a cylindrical outer peripheral contour such that the fulcrum pin is pivotally mounted therethrough in a bearing provided to this end in the brake lever fulcrum bracket.

3,759,115

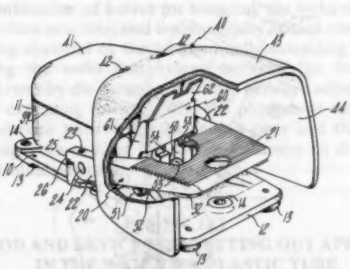
SAFETY FOOT CONTROL

Alfred R. Dibonaventura, and Leroy H. Ford, both of Woodstock, Conn., assignors to The Linemaster Switch Corporation, Woodstock, Conn.

Filed Apr. 19, 1972, Ser. No. 245,591

Int. Cl. G05g *1/14*

U.S. Cl. 74—512 **8 Claims**



A foot control such as a switch or valve of the treadle-operated type is provided with a guard cover inclosing the sides and top of the treadle and a movable abutment or stop normally retaining and locking the treadle in normal elevated unactuated position, the abutment or stop being disengageable by inward movement of a pivoted trip lever disposed at the inner end of the guard cover and treadle for actuation by the toe of the operator and being accessible only by insertion of the foot of the operator between the treadle and guard cover from the outer open end thereof. An additional safety measure may be the use of dual return springs for the treadle and stop.

3,759,116

DRIVE FOR CONVERTERS, ROTARY TROMMELS, PLATE CONVEYORS AND THE LIKE

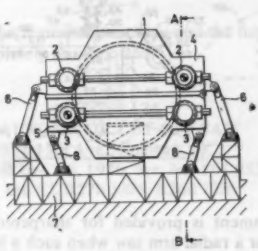
Walter Schroder, Stemmansfeld 10, Bochum-Stiepel, Germany

Filed June 22, 1972, Ser. No. 265,284

Claims priority, application Germany, June 22, 1971, P 21 30 781.3

Int. Cl. F16h *57/02*

U.S. Cl. 74—606 R **7 Claims**



Drive for converters, rotary trommels, plate conveyors and similar machines having a machine foundation and a machine shaft or a transmission drive shaft includes a large gear mounted on the shaft and disposed in a vertical plane, at least four pinions in meshing engagement with the gear at given engagement points along the periphery thereof, the pinions being mounted in pairs on respective pinion carriers, one of the carriers being located below the horizontal central plane of the gear, and link members connected to the machine foundation and extending parallel to tangents to the periphery of the gear located at the engagement points, respectively, each of the pinion carriers being individually supported independently of the gear, by the link members, for universal movement relative to the foundation.

3,759,117

GEAR FOR DRIVING FLYING SHEARS

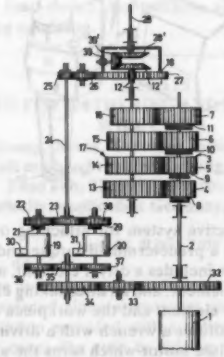
Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Irma Ungerer, Pforzheim, Germany

Filed Jan. 29, 1971, Ser. No. 110,820

Claims priority, application Germany, Jan. 29, 1970, P 20 03 922.9

Int. Cl. F16h *37/06*; B26d *1/56*

U.S. Cl. 74—681 **9 Claims**



In a change speed gear associated with flying shears for varying the travelling speed thereof and thus changing at will

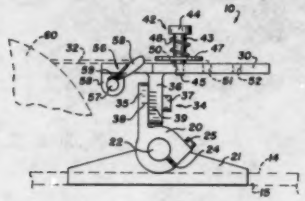
the sectional length of a material fed through the shears at a constant speed and severed by said shears, there are provided two steplessly shiftable drive assemblies continuously connected to a drive motor and selectably connectable to an output shaft continuously connected to the flying shears.

3,759,118

CIRCULAR SAW GRINDING ATTACHMENT

Dirk Glas, 4976 Rumble St., Burnaby, B. C., Canada

Filed Aug. 9, 1971, Ser. No. 93,118
Int. Cl. B23d *63/12*
U.S. Cl. 76—43 **7 Claims**



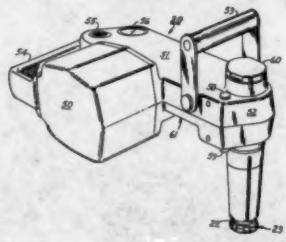
An attachment is provided for sharpening a blade of a bench saw or a radial arm saw when such a blade is removed from the driven arbor of the saw and is temporarily replaced by a grinding wheel. The attachment has a base and a guide which respectively engage and enter the work table top of the saw and the miter groove formed in the table with a shaft normal to the miter groove interconnecting the base and guide. A plate is mounted on the base so that the plate can be rocked to selected positions about the longitudinal axis of the shaft and about a horizontal axis disposed at right angles to said shaft axis. Securing means is provided to fasten the saw blade to the top of the plate so that the blade can be rotated progressively during the sharpening operation. The plate is fitted with stop means which engage the teeth of the saw blade as it is progressively rotated whereby to properly align other teeth with the grinding wheel.

3,759,119

INTERNALLY REACTIVE STRUCTURAL JOINDER SYSTEM

George S. Wing, 605 Paseo del Mar, Palos Verdes Estates, Calif.

Filed Sept. 13, 1971, Ser. No. 179,799
Int. Cl. B25b *13/46, 17/00*
U.S. Cl. 81—57.39 **14 Claims**



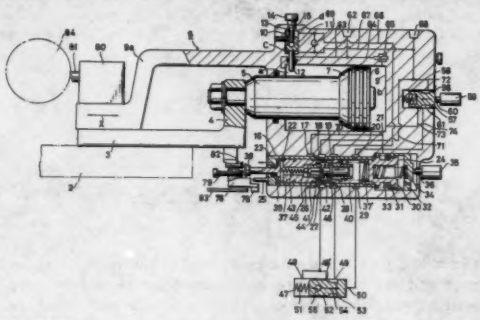
An internally reactive system for attaching one of its elements to another at a predetermined torque and axial tensile pre-load. The system includes a driver element, a fastener element, a workpiece element, and an interlinking element for interlinking the driver element and the workpiece element. The driver element constitutes a wrench with a driving arm, and a pressure-regulated fluid motor which turns the arm. The fluid motor exerts a force limited by the pressure of its motive fluid, and this force is directly proportional to the resulting torque level, because the system has no portion which during driving accelerates independently of any other portion, and no portion which overruns or impacts any other portion. The interlinking means may be a washer engaged by the frame of the driver element, and restrained relative to the workpiece element.

3,759,120

CYCLIC MOTION CONTROL DEVICE FOR MULTI-CYCLE PROFILING MACHINES

Haruo Iwata, Nagoya, Japan, assignor to Washino Kikai Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 16, 1971, Ser. No. 199,132
Int. Cl. B23b *3/28*
U.S. Cl. 82—14 A **2 Claims**



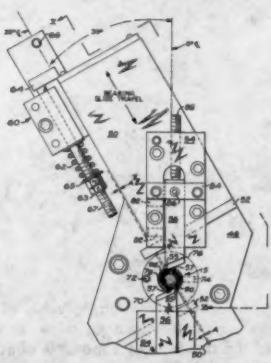
A device for controlling the cyclic motion of a multi-cycle profiling machine, so as to selectively actuate a cylindrical cycle, a shaping cycle, or a composite cycle, simply by adjusting the relative operative positions of two switches and the retarding stroke of a cut spool, without necessitating any change of machine parts. The two switches are related to said cut spool, a profiling slide, and a stylus.

3,759,121

APPARATUS FOR SKIVING REINFORCED HYDRAULIC HOSE

Christian A. Rassi, Morton, and Lyonell P. Dick, East Peoria, both of Ill., assignors to Caterpiller Tractor Co., Peoria, Ill.

Filed Dec. 20, 1971, Ser. No. 209,628
Int. Cl. B23b *5/00, 5/04*
U.S. Cl. 82—20 R **12 Claims**



A portable, self-contained machine for skiving reinforced hose fixedly held in position by a mandrel while a rotary

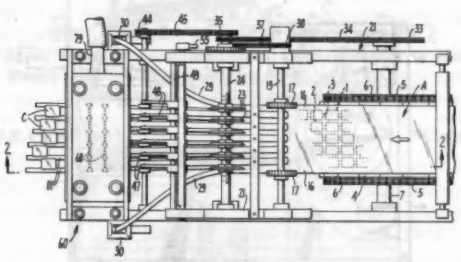
cutting assembly moves longitudinally along the portion of the hose which is to be skived. A pair of cutting members are held in tool blocks in the cutting assembly and are positioned on diametrically opposite sides of the mandrel and are in parallel alignment. The tool blocks can be advanced to a point of contact with a stop member which abuts an outer diameter of a collar portion of the mandrel. A spring system forces the cutting members against the reinforced hose until contact is made with a stop member. The cutting edges of the cutting members are displaced slightly ahead of the plane of the reinforced portion of the hose to permit a heel portion only of said cutting members to ride upon the surface of the reinforced hose when the hose has been skived in order to prevent the cutting edge from damaging the reinforced portion of the hose when an oversized diameter reinforced hose is encountered. Opposite sides of said cutting edges are chamfered to assist the cutting edge in biting radially into the outer resilient covering and to produce a chamfered edge on the resilient outer covering which remains on the unskived portion of the reinforced hose.

3,759,122

PACKAGE SEPARATOR AND CORNER CUTTING DIE FOR INDIVIDUAL PORTIONS, AND METHOD

William A. Lane, Danville, and Konrad E. Meissner, Lafayette, both of Calif., assignors to Filper Corporation, San Ramon, Calif.

Filed May 22, 1972, Ser. No. 255,754
Int. Cl. B65b *61/08*
U.S. Cl. 83—24 **14 Claims**



Apparatus for separating filled and covered cavities that are formed in alignment in spaced transverse and longitudinally extending rows in a sheet of plastic with planar webs of said sheet and cover extending around and connecting said cavities and for also rounding the corners of the webs. The apparatus is a combination of knives for bisecting the webs connecting said cavities in a direction longitudinally of said rows without removing material of the longitudinally extending webs and bisecting the webs that extend between the transversely aligned rows by die cutting a thin strip between adjacent transversely extending rows and also the portions at the intersections between transversely extending rows and transversely extending webs to form the rounded corners on the webs of the individual portions.

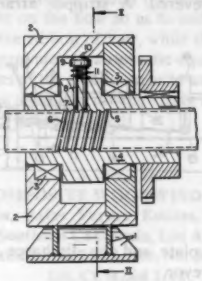
3,759,123

METHOD AND DEVICE FOR CUTTING OUT APERTURES IN THE WALL OF A PLASTIC TUBE

Cornelis Van Zon, Zwolle, Netherlands, assignor to Wavin N.V., Zwolle, Netherlands

Division of Ser. No. 756,237, Aug. 29, 1968, Pat. No. 3,604,301. This application June 8, 1971, Ser. No. 151,146
Int. Cl. B26d *3/00, 5/16*
U.S. Cl. 83—54 **3 Claims**

A process of forming apertures in the wall of a corrugated thermoplastic tube by punching the wall with a punch. The outer circumference of the tube is engaged with a hollow tubular guide in the region of punching and the inner surface of the tube is completely unsupported.

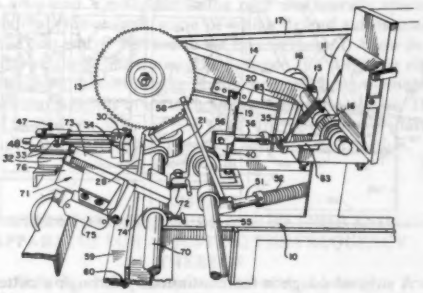


3,759,124

AUTOMATIC CUT-OFF SAW

Berl E. Bashor, 802 15th Ave., Conway, S.C.

Filed Dec. 28, 1970, Ser. No. 101,853
Int. Cl. B27b *5/06;* **B26d** *7/06*
U.S. Cl. 83—81 **3 Claims**



When a cut-off saw moves to a non-cutting position, a first linkage is operated to shift a lumber feeding roller into active engagement with the lumber and to simultaneously de-activate a lumber holding brake. The lumber is fed longitudinally until its leading end engages a limit switch. This switch activates means to move the saw toward a cut-off position and this movement of the saw de-activates the feed roller and resets the lumber holding brake during the cut. As the saw completes the cut, a second linkage is operated to cause quick dumping of the lumber from the machine. As the lumber disengages the limit switch, the machine automatically recycles to the starting condition.

3,759,125

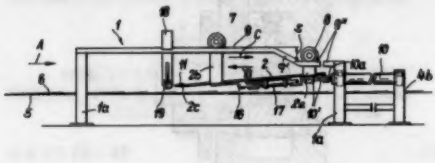
APPARATUS FOR GATHERING AND CUTTING ROLLED-WIRE COILS

Klaus Vortkamp, Neuss, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Feb. 22, 1972, Ser. No. 228,123
Claims priority, application Germany, Feb. 25, 1971, P 21 08 907.6
Int. Cl. B26d *7/06*
U.S. Cl. 83—90 **10 Claims**

Successive overlapping coils of wire, e.g. from a wire-rolling mill, are displaced along a transport path past a cutting and collecting station provided with a collecting plate which can be tilted to cause the coils to ride up along this plate. The latter is provided with a gate which, when swung away by a fluid-responsive actuator, exposes a guide notch into which

the wire tying the collected coils to the coils and the conveyor is received and severed. A stripper arrangement enables



withdrawal of the plate and the discharge of the collected turns onto the conveyor.

3,759,126

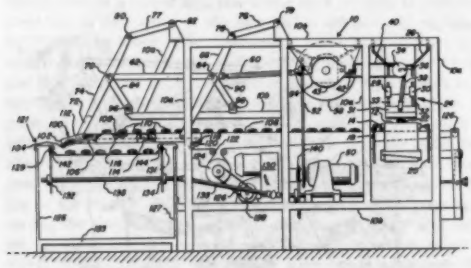
TRANSFERRING, CUTTING AND DEPOSITING APPARATUS FOR BAKERY GOODS

Ralph D. Burgess, Excelsior, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed May 12, 1972, Ser. No. 255,877

Int. Cl. B26d *4/46, 5/22;* **B65g** *47/26*

U.S. Cl. 82—112 **10 Claims**



A strip of dough is fed continuously through a cutter consisting of a reciprocating blade which slices the dough strip into pieces of equal thickness. The cut pieces fall onto a horizontally disposed endless belt conveyor that transfers them onto a carriage adapted to be moved along an axis aligned with the direction of motion of the pieces on the conveyor. The carriage includes first and second conveyor belt rolls. The first is located at the free end of the carriage and the second is located at the end of the carriage closest to the cutter. The carriage is supported at the lower end of downwardly hanging support links connected at their upward ends to rocker links which are secured to a supporting framework. Each support link is pivotally connected at its center to a toggle link which is pivoted to the framework at its lower end. The pivot point between the support link and the toggle link is oscillated by a connecting rod secured at its other end to a rotating crank. In this way the links support the carriage and cause it to reciprocate along a stright line thereby depositing the pieces in aligned rows on a tray conveyor beneath the carriage.

3,759,127

IRIS TYPE CUT OFF KNIFE

Donald N. Mills, Fonthill, Ontario, Canada, assignor to Union Carbide Canada Limited, Toronto, Ontario, Canada

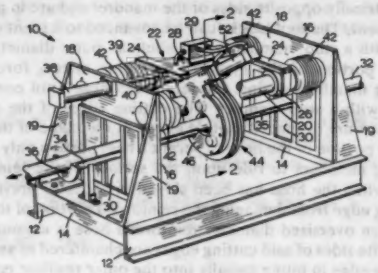
Filed Feb. 11, 1972, Ser. No. 225,464

Claims priority, application Canada, Jan. 6, 1972, 131773

Int. Cl. B23d *25/04*

U.S. Cl. 83—318 **8 Claims**

An iris type cutting apparatus for cutting stock, particularly cylindrical or tubular carbon electrodes, is described. The apparatus consists generally of a plurality of rotatable shafts mounted on a framework and spaced around the stock, each shaft carrying an eccentrically mounted platelike circular cutting knife adapted for rotation with the shaft and a means



on said apparatus for causing all the shafts to rotate simultaneously to carry the knives simultaneously toward and to cut at least part way into the stock and away from the stock.

3,759,128

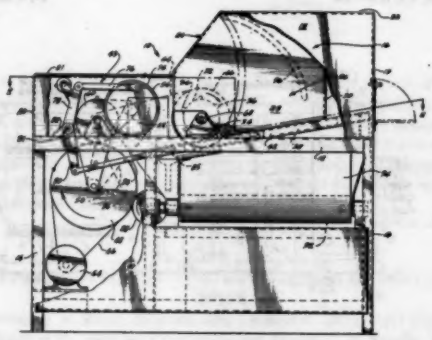
MEAT SLICING MACHINE

Bert F. Dewhurst, 1244 Justin Ave., Glendale, Calif.

Filed June 28, 1972, Ser. No. 266,992

Int. Cl. B26d *4/06, 7/06*

U.S. Cl. 83—411 R **5 Claims**



A meat slicing machine includes a supporting framework, a hopper attached to the framework, and a rotatable drum in the bottom of the hopper. A set of parallel, longitudinally reciprocating blades having upwardly facing cutting edges are disposed below the drum. Several series of longitudinally spaced apart fingers project outwardly from the drum surface. A piece of meat disposed in the hopper is forced against the fingers with the aid of a pressure plate in the hopper. The fingers stab the meat, and the drum rotates the meat progressively into contact with the reciprocating knife blades to slice the meat into several cuts. Meat can be continuously fed into the hopper and sliced, and an endless conveyor belt below the blades continuously discharges the cuts from the machine to a suitable receptacle.

3,759,129

POWER UNIT

Melvin E. Bricker, and Thomas E. Dugle, both of Cincinnati, Ohio, assignors to Bricker Products, Inc., Cincinnati, Ohio

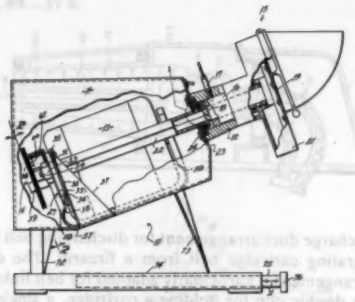
Filed May 4, 1972, Ser. No. 250,211

Int. Cl. B26d *7/26, 4/22*

U.S. Cl. 83—444 **12 Claims**

An improved power unit for driving vegetable cutting attachments comprises a housing, a motor mounted within the housing, an attachment supporting hub mounted on the front

of the housing and a drive for connecting the motor to a shaft extension of the attachment. The drive includes a drive sleeve mounted for rotation and radial displacement in the hub, a sprocket attached to the rear of the sleeve and a resilient bracket for universally and rotatably supporting the rear end of the sleeve. The shaft extension of the vegetable cutter extends a relatively short distance into the front end of the drive



sleeve to provide, in combination with the radial displacement of the sleeve and with the resilient rear bracket, a universal driving connection therebetween. A tensioner is provided to tension a chain connecting the sprocket attached to the sleeve and a sprocket on a motor output shaft. The drive components are releasably secured together to facilitate unskilled disassembly for repair.

3,759,130

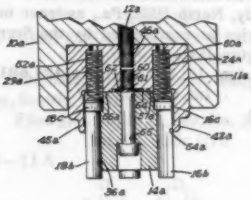
REPLACEABLE TIP SHEAR PROOF PUNCH

Clinton E. Patterson, Minneapolis, Minn., assignor to Mate Punch and Die Company, Anoka, Minn.

Filed Apr. 13, 1972, Ser. No. 243,696

Int. Cl. B26f *1/12*

U.S. Cl. 83—637 **7 Claims**



A shear proof punch with heel aligning structure formed as a part of the punch tip retainer but without difficult machining tolerances.

3,759,131

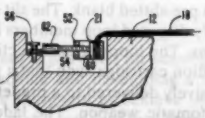
BOW FOR STRINGED INSTRUMENTS

Myron R. Brock, 11408 Cedar Ln., Beltsville, Md.

Filed Feb. 24, 1972, Ser. No. 228,993

Int. Cl. G10d *1/02*

U.S. Cl. 84—282 **4 Claims**



The bow is equipped with a ribbon of hair strands having its outer end fixedly mounted in the bow head or tip element and its inner end mounted in a clamp with a pivotal mounting which is axially adjustable within the bow frog which is itself axially adjustable on the bow so as to suitably adjust the tension applied to the ribbon of hair, while the pivotal mounting of its inner end provides an automatic equalization of the tension at both edges of the ribbon, so as to assure a clear tone for full, broad stroke as well as off-the-string bowing on the string instrument which may be played.

3,759,132

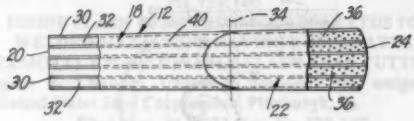
COMPOSITE WOODWIND REED

John G. Backus, Palos Verdes Estates, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Nov. 6, 1972, Ser. No. 303,700

Int. Cl. B26d *5/42*

U.S. Cl. 84—383 **6 Claims**



A composite woodwind reed including a body portion having a butt end and including a tapered vamp portion terminating in a tip end. Embedded in the reed are laterally spaced, longitudinal ribs at least some of which extend substantially from the butt end of the reed to the tip end thereof. A low density filler material fills the spaces between the stiffening ribs, the filler material comprising hollow bodies having diameters of a few thousandths of an inch and embedded in plastic. The upper and lower sides of the reed are covered by plastic coatings bonded to the body portion and the vamp portion.

3,759,133

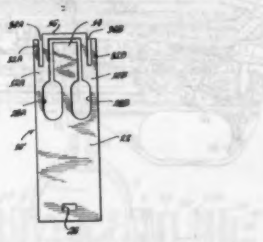
VIBRATOR STRUCTURE AND METHOD AND APPARATUS FOR ADJUSTING THE FREQUENCY THEREOF

Irvin Budych, Lake Geneva; LaVerne Lawrence Frey, Delavan, both of Wis., and William Edward Reefman, Santa Barbara, Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jan. 24, 1972, Ser. No. 220,357

Int. Cl. G04c *3/00*

U.S. Cl. 84—457 **9 Claims**



A method and apparatus for tuning and adjusting the frequency of a vibrator structure such as a tuning fork of the type formed from a single thin strip of low molecular loss material. Tuning is effected by bending one or more of the tines of the fork or preferably by bending an ear formed for this purpose on a tine. In the alternative, the frequency may be controlled by selectively removing material from an ear.

In order to maintain the balance of the structure it is desirable that tuning be performed on both tines of a fork. A preferred method for performing the tuning involves forming the structure in a manner such that its frequency is always lower than required. This frequency is then measured and half

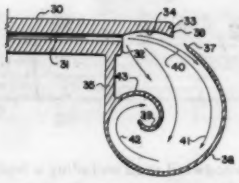
the difference in frequency is corrected by bending ears formed on an outer tine. Material is then removed from an inner tine by, for example, burning the material off with a laser, to raise the frequency to the desired value.

3,759,134

SUPERSONIC FLOW DEFLECTOR AND SILENCER

Lyndon S. Cox, Silver Spring, Md., and Chris E. Spyropoulos, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 27, 1971, Ser. No. 211,996
Int. Cl. F41f *17/12*
U.S. Cl. 89—14 D **3 Claims**



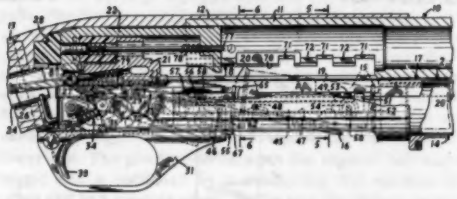
A super-sonic flow deflector for deflection of under-expanded gas flow at an angle as great as the exit angle of the deflector surface. A scroll container accompanies said deflector to act as a collector for the exhaust gases after deflection.

3,759,135

SEMI-AUTOMATIC SHOTGUN

James Tollinger, Ithaca, N.Y., assignor to Ithaca Gun Company, Incorporated, Ithaca, N.Y.

Division of Ser. No. 864,446, Oct. 7, 1969, Pat. No. 3,680,433.
This application Nov. 9, 1971, Ser. No. 197,178
Int. Cl. F41c *13/00*
U.S. Cl. 89—33 B **3 Claims**



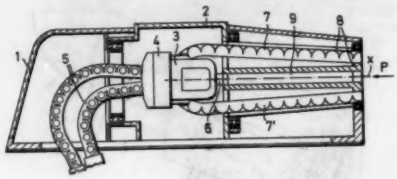
In the particular embodiment of the invention described herein, a semi-automatic shotgun is provided with a piston which is independently movable in a cylinder to drive the action of the gun rearwardly, a single cartridge stop normally retaining cartridges in a magazine and released by rearward motion of the action, and a carrier latch which slides rearwardly to release the carrier when the cartridge being chambered is fully disposed on the carrier, thereby permitting that cartridge to retain other cartridges in the magazine until the cartridge stop is restored to its cartridge blocking position. To chamber the cartridge, a rotatable breech block is rotated from its open to its locked position by axial motion of a bolt support extending through a cam slot in the bolt.

3,759,136

AUTOMATIC FIREARM DISPOSED IN A GUN TURRET AND PIVOTABLE IN THE VERTICAL DIRECTION

Karl Fammler, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed May 9, 1972, Ser. No. 251,788
Int. Cl. F41d *9/02*
U.S. Cl. 89—33 BB **16 Claims**



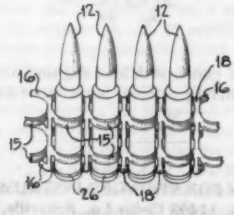
A discharge duct arrangement for discharging belt links of a disintegrating cartridge belt from a firearm. The discharge duct arrangement is particularly adapted for belt links consisting of a double clip for holding a cartridge, a single clip for connecting the link to the next adjacent cartridge and a bracket connecting the double clip to the single clip. Three guide tracks are arranged in the discharge duct for slidably engaging the respective single clip, double clip and bracket as the links pass through the duct. These guide tracks are positioned such that only two of the tracks engage the belt at any given time and such that the belt link is inclined slightly as it is guided through the duct. When used with a pivotable turret, rotation of the duct with the turret may cause a tilting of the belt clip and consequent disengagement from one of the guide tracks and engagement with another previously disengaged guide track, with the third guide track remaining in engagement. Two similar discharge ducts can be arranged mirror-like in ε common rotatable support at opposite sides of a cartridge ejection duct also in the support.

3,759,137

CARTRIDGE LADDER LINK

Andrew J. Grandy, North Hills, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 13, 1971, Ser. No. 171,601
Int. Cl. F41f *9/02*
U.S. Cl. 89—35 R **2 Claims**

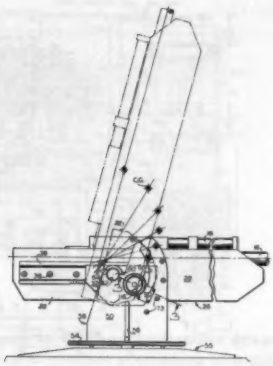


A cartridge ladder link which is lightweight and inexpensive. It is constructed as a continuous strip of thin metal formed from a pre-slitted blank. The slit strip is formed to provide alternately disposed loop members in each of similar successive sections. The loops of each section form a receptacle for an annumition cartridge such that a plurality of cartridges can be successively delivered to a predetermined loaded position in an automatic weapon. The ladder link can have all closed loops for use in weapons such as a linkless feed minigun or contain selected open loops for use in other types of weapons such as conventional machine guns.

3,759,138
ADJUSTABLE PIVOTING CRADLE FOR LARGE CALIBER GUNS

Frederick S. Schrage, Rock Island, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 14, 1970, Ser. No. 97,644
Int. Cl. F41f *21/04*
U.S. Cl. 89—37 R 2 Claims

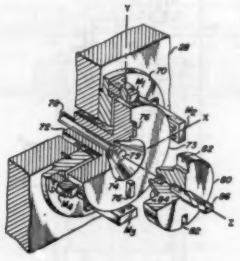


In order to increase the firing stability of a gun mount wherein a traversing carriage is rotatably supported on a stationary firing platform, the recoiling parts of the gun are slidably housed in a cradle formed by an outer frame pivoted in the carriage and an inner frame slidably seated in the outer frame to extend substantially rearward of the pivot point of the latter, the cradle also including means responsive to changes in the elevation angle of the gun for relocating the center of gravity of the cradle relative to the central vertical axis of the firing platform to minimize the overturning movement thereof during the firing of the gun.

3,759,139
RUNOUT COMPENSATION FOR MAGNETIC MILLING FORCE SENSORS

William J. Whetham, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 26, 1972, Ser. No. 220,749
Int. Cl. B23c *1/16*
U.S. Cl. 90—11 A 4 Claims

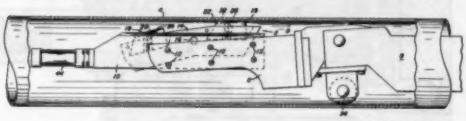


An improved system is provided for sensing spindle deflection of a milling machine and developing a feedrate control signal in accordance therewith to achieve optimum tool life consistant with high metal removal rate from a workpiece. A plurality of magnetic transducers are disposed adjacent the spindle or spindles of a milling machine, and each magnetic transducer is excited by an audio frequency signal such that, as deflection of a spindle brings the spindle closer to or moves it further from a transducer, a corresponding change in the impedance characteristics of the transducer is utilized to develop an a-c signal of a given amplitude. Signals developed from opposing transducers are fed to a differential amplifier to derive a difference signal which is demodulated by a phase detector, rectified and filtered, and then passed through a squaring circuit in order that signals corresponding to the square of the deflection sensed by each transducer pair may be mixed to provide a d-c voltage representing the sum of the squares representing the deflection components. The square root of the sum of the squares is then taken to give a feedback signal proportional to the vector sum of spindle deflection for utilization as a feedrate correction signal. For milling machines utilizing multiple spindles simultaneously, a peak detector circuit is utilized to select the largest sum of the squares only for subsequent development of the feedrate correction signal.

3,759,140
INSIDE FLASH BEAD TRIMMER APPARATUS FOR WELDED METAL PIPE HAVING ALTERNATELY REMOTELY POSITIONABLE FLASH BEAD CUTTERS

Eugene B. Connelly, Churchill Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1972, Ser. No. 239,147
Int. Cl. B23d *1/02*
U.S. Cl. 90—24 B 6 Claims

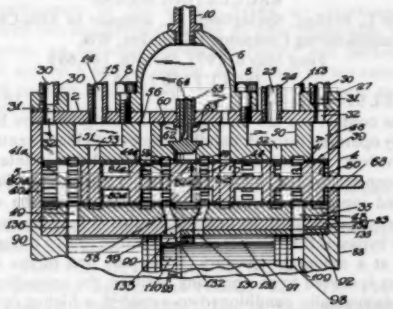


Apparatus includes a frame rigidly supported on the inner end of a boom extending into a welded tube or pipe, the pipe being longitudinally movable relative to the boom; an elongated rocker body having an inner flash bead cutter thereon adjacent each end thereof pivotally mounted intermediate its ends in the frame; a cam mounted for longitudinal movement in the frame subjacent and relative to the rocker body for alternately raising the ends of the rocker body so as to place one of the cutters into operating position when the other cutter becomes worn; and remotely operable means mounted on the frame and connected with the cam for moving it relative to the rocker body.

3,759,141
STEAM ENGINE

Joseph Zibrun, 1741 W. 33rd St., Chicago, Ill.

Filed Dec. 27, 1971, Ser. No. 212,564
Int. Cl. F01b *25/02*, *1/02*
U.S. Cl. 91—20 4 Claims



A novel multi-cycle compound steam engine having novel means for providing a double use of steam and wherein the

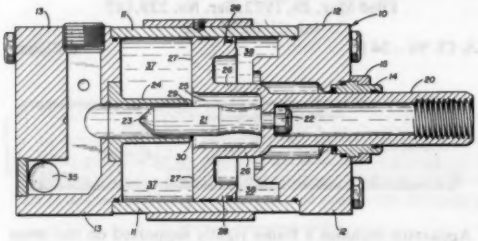
steam on opposite sides of a reciprocating piston having rectilinear movements in a cylinder may be pressure equalized and wherein the maximum amount of high pressure steam may be efficiently employed. Said piston having separate connected terminal heads with a close fitting working engagement with the cylinder wall, and wherein the body of the piston is of less diameter than the heads so that the steam chamber is provided between the heads and between the cylinder wall and the piston body, so that the steam chamber is divided into two separate compartments; and having steam compartments within the cylinder between the ends thereof and the adjacent heads of the piston; said engine being optionally usable as a double engine, or as a simple engine, and which has novel valve means as described.

3,759,142

AIR SPRING CYLINDER ASSEMBLIES

John Hardy Maytag, Denver, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Oct. 8, 1971, Ser. No. 187,629
Int. Cl. F15b *15/22, 15/17*
U.S. Cl. 91—396 **8 Claims**



An air spring cylinder assembly for maintaining contact between a cam and its follower in a machine wherein a machine element is actuated by cam and follower mechanism, comprising an air cylinder, a rod and piston reciprocably mounted in the cylinder, the piston having a contoured nose which is non-uniform in diameter and movable in axial directions in an orifice bushing to vary the rate of air escape from the rear of the piston, including a pressurized air supply and valve means admitting air continuously to an air chamber rearward of the piston and alternately admitting and exhausting air from an air chamber forward of the piston to thereby produce close correspondence between actual and required force to restrain the machine element.

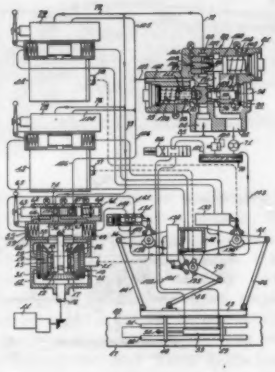
3,759,143

FLUID CONTROL SYSTEM FOR EARTHWORKING APPARATUS INCLUDING AUTOMATIC PRESSURE REGULATING MEANS

Ferris L. McRay, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 6, 1971, Ser. No. 140,698
Int. Cl. F15b *11/16*
U.S. Cl. 91—414 **10 Claims**

The control box jaw clutches of a motor grader are hydraulically operated through parallel connected closed center control valves. An automatic pressure regulator is interposed between the source of pressurized fluid and the parallel connected inputs to the control valves. When all the control valves are in neutral, an unloading valve in the pressure regulator bypasses fluid flow from the pressure source to the reservoir at a moderate pressure. When any one of the control valves is moved to an operating position, the unloading valve is automatically conditioned to establish a higher operating pressure. The higher operating pressure is established by hydraulically biasing the unloading valve fluid flow control element by pressurized fluid delivered to the jaw clutch actuators by the associated control valve. Upon the controlled apparatus moving to a limit position, a dumping valve is opened, thereby reducing the pressure to the jaw clutch actuator allowing the centering spring in the jaw clutch mechanism to return it to neutral position even though its control valve is still in an operating position. The reduction in control valve operating pressure, resulting from opening of the dumping valve, reduces the fluid pressure bias on the unloading valve



flow control element thereby reducing the bypass pressure level until the 100 psi level is re-established. Fluid bypassed by the unloading valve element is delivered to an auxiliary control valve circuit having a high pressure relief valve. A pressure limiting valve downstream of the unloading valve prevents the jaw clutch control circuits from being subjected to more than an intermediate pressure. moooooomu

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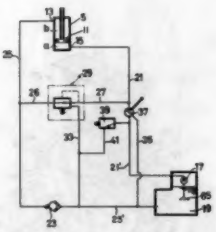
3,759,144

HYDRAULIC ACTUATING SYSTEM FOR HYDRAULICALLY OPERATED BENDING MACHINE

Hidekatsu Ikeda, Kanagawa-ken, Japan, assignor to Amada Company Limited, Isehara-shi, Japan

Filed Aug. 11, 1971, Ser. No. 170,876
Claims priority, application Japan, Aug. 17, 1970, 45/71412
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—436 **2 Claims**



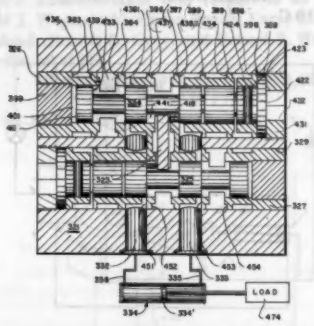
A hydraulic actuating system for a hydraulically operated bending machine which is so designed and constructed that, by using an automatically operable pressure-sensitive valve, the hydraulic ram and driving apron is caused to move at an increased speed during its idle movement towards the workpiece by bypassing fluid from the discharge chamber of the ram to the drive chamber and at a decreased speed but increased force during the bending operation by passing fluid from the discharge chamber to the tank.

3,759,145

SERVOMECHANISM

William W. Taylor, Suite 103 - 5300 Hamilton Avenue, Cincinnati, Ohio

Continuation-in-part of Ser. No. 71,133, Sept. 10, 1970, abandoned. This application June 1, 1971, Ser. No. 148,695
Int. Cl. F15b *13/044*; F16k *11/07*
U.S. Cl. 91—459 16 Claims



A servomechanism in which a torque motor drives a flapper arm. The flapper arm controls positioning of a pair of spool members. Each of the spool members moves inside a ported bushing. Movement of each spool controls ports which can be used to supply fluid under pressure to a hydraulic motor. The housing of the torque motor is mounted for swinging about a pair of transversely extending axes to set both the relative axial positions of the spool members and their null positions relative to the ported bushings.

ERRATUM

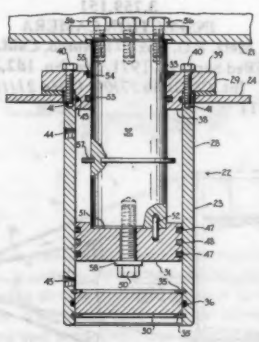
For Class 91—475 see:
Patent No. 3,758,899

3,759,146

BELT TENSIONER FOR WIDE BELT SANDING MACHINES

Cecil D. Brotherton, Coon Rapids, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

Filed Apr. 7, 1972, Ser. No. 241,953
Int. Cl. F16j *1/00, 11/02, 15/18*
U.S. Cl. 92—13.6 1 Claim



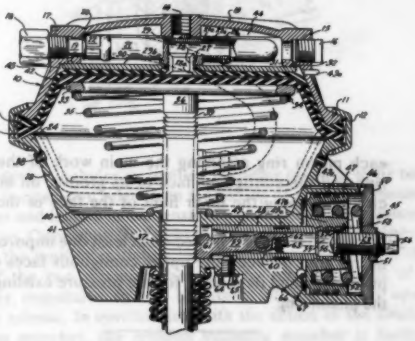
The cylinder of a fluid motor comprises a length of steel tubing, a disc-like closure member secured in one end thereof by snap rings, and an apertured closure member secured to its other end by cap screws threaded axially into its wall. A concentric cap screw through the piston secures it to a rod made of a length of shafting. The piston extension stroke limit is defined by a snap ring on the rod, engageable with the apertured closure member; the retraction limit by engagement of the head of the concentric cap screw against the other closure member.

3,759,147

DIAPHRAGM BRAKE ACTUATOR

Carl E. Johnsson, Johanneshov, Sweden, and Kenneth D. Swander, Jr., Prairie Village, Kans., assignors to Certain-Teed Saint Gobain Insulation Corporation, Valley Forge, Pa.

Filed Feb. 24, 1971, Ser. No. 118,440
Int. Cl. F01b *19/02*; F15b *15/26*
U.S. Cl. 92—19 7 Claims



An improved service brake air diaphragm chamber having two diaphragms placed close to each other therewithin and held in position inside the service chamber by a single clamp band, the outer of said diaphragms having an air hose fitting, whereby air pressure may be fed through said fitting to the space between the diaphragms by means of a flexible air hose connected to the fitting and an inlet port on the outer pressure plate of the service chamber, the service chamber having its rear cover or pressure plate made with a cavity behind the outer diaphragm for lodging the half-coil flexible hose and a second inlet port outboard of the outboard diaphragm to feed air pressure outboard thereof.

Service brake locking means including a push rod made with saw-tooth grooves on a length thereof spaced from a push rod disc on one end thereof abutting the inner of said two diaphragms, the saw-tooth grooves operating as a ratchet to be held in a locked position by means of a spring actuated pawl, when the diaphragms have transmitted their force to the push rod (locking the brake in on position), the pawl being part of a piston which, on one side thereof, is actuated by spring force and the other side actuated by air pressure;

The combination of the service brake air diaphragm chamber with two diaphragms and the air hose fitting with, as a first option, an outboard spring emergency and parking brake unit and, as a second option, an inboard spring emergency and parking brake power unit, neither of these two latter forms employing a lock mechanism.

3,759,148

PISTON AND PISTON RINGS UNIT FOR AN INTERNAL COMBUSTION ENGINE

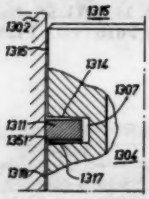
Robert Geffroy, Neuilly-sur-Seine, France, assignor to Sealfire, Luxembourg, Germany

Filed Feb. 13, 1968, Ser. No. 705,083
Claims priority, application France, Feb. 17, 1967, 6795532; June 29, 1968, 68112517; Jan. 18, 1968, 68136565
Int. Cl. F01b *31/10*
U.S. Cl. 92—160 48 Claims

A piston and compression and oil control piston rings unit for internal combustion engines, said unit being placed in a

cylinder delimiting a combustion chamber with its head and said piston which comprises a body formed with a head and a skirt, grooves receiving said rings, oil return orifices and a central cavity, each piston ring and its groove comprising a pair of upper contiguous faces and a pair of lower contiguous faces one of said faces of each piston ring being a face assuming the main work of the piston ring, in which:

an efficient sealing means is placed between the face of



each piston ring assuming the main work of the piston ring and the contiguous face of its groove, on at least a circle adjoining the inner limit of the face of the piston ring,

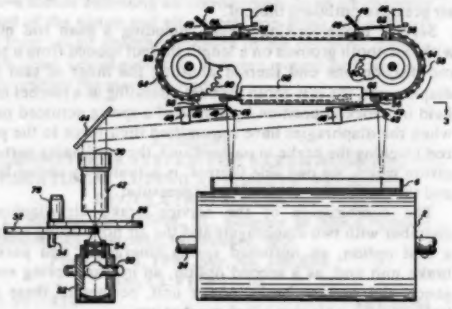
and an access means is placed on at least one important part of the area between the upper contiguous faces of each piston ring and its groove, for the pressure existing above the piston ring.

3,759,149

MULTIPLE FLASH LAMP ALPHANUMERIC PROJECTION DISC ASSEMBLY

Lawrence J. Mason, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 13, 1972, Ser. No. 288,612
Int. Cl. B41b *15/08, 21/14*
U.S. Cl. 95—4.5 **2 Claims**



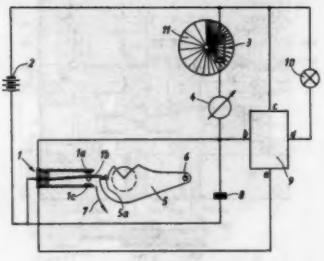
A recording system wherein a character disc having transparent character images thereon is rotated through an exposure zone so that selected characters may be projected by the energization of a flash lamp. The projected image is collimated and directed to a recording zone through which move lens-mirror units at a constant speed that intercept the projected image and focus it onto a photoreceptive recording medium. Sets of characters on the character disc pass through alternate exposure zones, each zone being associated with a different flash lamp, so that the lamps have sufficient time to recover after flashing.

3,759,150

TIMING ARRANGEMENT FOR USE IN CAMERAS ADAPTED TO BE USED FOR MAKING LONG EXPOSURES

Karl Wagner, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 14, 1972, Ser. No. 262,725
Claims priority, application Germany, June 18, 1971, P 21 30 197.3
Int. Cl. G03b *7/08, 9/08*
U.S. Cl. 95—10 C **8 Claims**



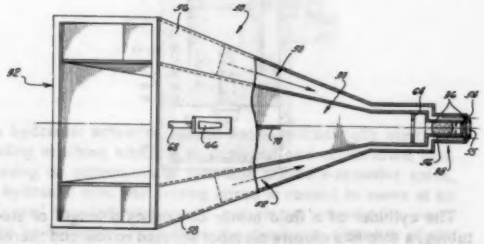
A photographic camera can be used for making long exposures of the type requiring the user to effect opening of the shutter and then to positively effect closing of the shutter after the elapse of an appropriate exposure time. A timing arrangement which notifies the user when to close the shutter comprises an energy-storing element, and supply means for supplying energy to the energy storing element. A photosensitive element, exposed to scene light, controls the rate of change of energy stored by the energy-storing element as a function of scene brightness, after the shutter has been opened, and permits the amount of energy stored by the energy-storing element to reach a predetermined value corresponding to a predetermined total amount of light impingement on the photosensitive element. An electronic threshold detector, connected with the energy-storing element and having an output, produces at its output a control signal only when the energy stored by the energy-storing element has reached the aforesaid predetermined value. An electrical signalling unit, such as a lamp or buzzer, is connected to the output of the threshold detector, and furnishes to the user of the camera a readily observable timing signal in response to generation by the threshold detector of the aforementioned control signal, thus notifying the user that closing of the shutter should be effected.

3,759,151

INSPECTION CAMERA

Raymond W. Metz, P.O. Box 271, Norco, Calif.

Filed Sept. 21, 1971, Ser. No. 182,374
Int. Cl. G03b *37/00*; G01n *21/16*
U.S. Cl. 95—11 **3 Claims**



A camera constructed to photograph the interior of aircraft engine cylinders through spark plug holes which includes a

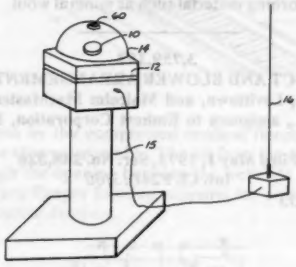
light-sealed housing angled to focus the interior cylinder image. The camera includes a flash reflector tunnel which illuminates the specific area being photographed.

3,759,152

AUTOMATIC LIGHTNING DETECTION AND PHOTOGRAPHIC SYSTEM

James C. Fletcher, Administrator of the National Aeronautics & Space Administration with respect to an invention of; Ronald J. Wojtasinski, Cocoa Beach; Larry D. Holley, Merritt Island; Jimmie L. Gray, and Robert B. Hoover, both of Titusville, all of Fla.

Filed Sept. 27, 1972, Ser. No. 292,682
Int. Cl. G03b *17/38*
U.S. Cl. 95—11 4 Claims



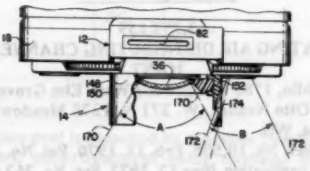
A system for monitoring and recording lightning strokes within a predetermined area with a camera having an electrically operated shutter with means for advancing the film in the camera after activating the shutter. The system includes an antenna for sensing lightning strikes which, in turn, generates a signal, that is fed to an electronic circuit which generates signals for operating the shutter of the camera. Circuitry is provided for preventing activation of the shutter as the film in the camera is being advanced.

3,759,153

LENS SHADE

Karl H. Aimo, Cambridge, and Philip G. Baker, Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 25, 1972, Ser. No. 300,809
Int. Cl. G01j *1/06;* G03b *17/12*
U.S. Cl. 95—11 R 21 Claims



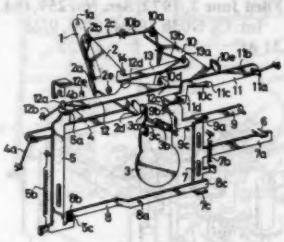
A lens shade is provided for use with compact photographic apparatus, e.g., a camera, of the type having an objective lens and a light sensing device mounted thereon in close proximity to one another. The lens shade extends outwardly from the camera housing and shades the lens without blocking its field of view, however, the shade does extend into the overlapping field of view of the light sensing device. To overcome this problem, the lens shade is provided with a light transmitting section or louvered opening therein for selectively transmitting and directing light from portions of the overlapping field of view to the light sensing device.

3,759,154

DEVICE FOR AUTOMATICALLY FIRING FLASH BULBS IN CAMERA

Akira Yamanaka, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 17, 1971, Ser. No. 144,187
Claims priority, application Japan, May 19, 1970, 45/43228; May 30, 1970, 45/46554
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5 R 7 Claims



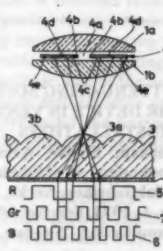
The device includes an ignition initiating member to be tensioned in operative relation to tensioning of a shutter opening member and locked in the tensioned position by two retaining members. Only when flashlight is required for taking a photograph, the ignition initiating member is disengaged from the first of the two retaining members by the movement of a member responsive to the brightness of the subject upon shutter release. In synchronism with the action of the shutter opening member, the ignition initiating member is further released from the second retaining member. The ignition initiating member functions to fire the flash bulb only when freed from engagement with both of the retaining members by effecting the striking of a piezo-electric element whose electrical output ignites the flash bulb or the striking of the leg of a percussion ignitable flash bulb.

3,759,155

METHOD OF PHOTOGRAPHIC COLOR RECORDING

Friedrich Bestenreiner, Grunwald near Munich, and Reinhold Deml, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 830,065, June 3, 1969, Pat. No. 3,641,895, which is a continuation-in-part of Ser. No. 803,676, March 3, 1969. This application Jan. 10, 1972, Ser. No. 216,544
Claims priority, application Germany, Mar. 2, 1968, P 16 22 865.2; June 4, 1968, P 17 72 568.7
Int. Cl. G03b *33/14*
U.S. Cl. 95—12.2 3 Claims



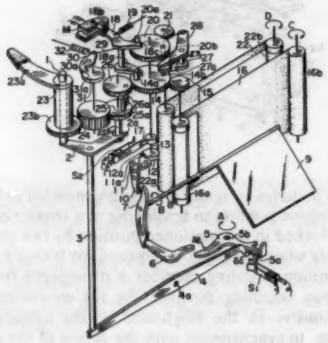
A photographic objective, in whose plane a set of filter strips associated with different colors is located, forms an image on a black and white film while the lens elements of a lenticular grating form images of the set of colored strips on the corresponding areas of the film. All strip images together form a strip grating on the film so that the image formed by the

objective can be reproduced as a color picture by the diffraction orders of the strip grating.

3,759,156
PHOTOGRAPHIC CAMERA PROVIDED WITH ELECTRICALLY CONTROLLED SHUTTER

Toshio Kobori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 2, 1972, Ser. No. 259,194
Int. Cl. G03b *19/04, 9/00, 9/28*
U.S. Cl. 95—31 AC **6 Claims**



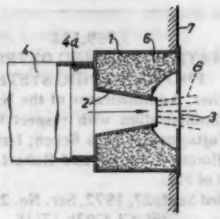
A photographic camera provided with a curtain shutter in which the time interval between the actuation of an opening curtain and a closing curtain is controlled by an electrical control circuit, wherein when a winding means winds a film and the shutter is cocked, a stop lever restrains the turning of the winding means and releases the restraint of the winding means with the termination of the driving of the closing curtain to the rest position in response to the shutter release operation. A detecting member detects the power voltage drop in an electrical control circuit, which voltage drop is lower than a predetermined value at which proper exposure control becomes impossible to be effected by the electrical control circuit. The detecting member prevents the release of the winding means which is restrained by the stop lever at the time of exposure termination and also prevents the shutter curtain from being wound to the cocked position so as to prevent repeated photographing under improper exposure conditions.

3,759,157
CROSS-TALK ATTENUATING SUPPLY AIR AND EXHAUST AIR DEVICE IN VENTILATION INSTALLATIONS

Birger Larkfeldt, Barnap; Stellan Akesson, and Ingmar Josefsson, both of Jonkoping, all of Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Necka, Sweden

Filed Dec. 1, 1971, Ser. No. 203,533
Claims priority, application Sweden, Dec. 17, 1970, 17175/70
Int. Cl. F24f *7/00*
U.S. Cl. 98—37 **10 Claims**

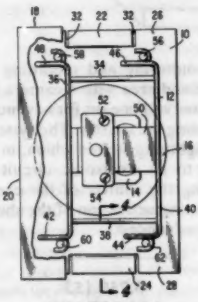
A device for supplying or exhausting air in the rooms of a multiple-room building having a central system with ducts common to several rooms. The device is a chamber which has a convergent tubular inlet frustum for delivering a stream into the chamber, and an outlet opening for delivering the air from the chamber. A silencer passageway is between the smaller open end of the tubular frustum and the outlet opening for attenuating cross-talk. The passageway is preferably surrounded by sound-absorbing material such as mineral wool.



3,759,158
DUCT AND BLOWER ARRANGEMENT

James Henry, Levittown, and Malcolm MacMaster, Yardley, both of Pa., assignors to Emhart Corporation, Bloomfield, Conn.

Filed May 1, 1972, Ser. No. 248,826
Int. Cl. F24f *13/00*
U.S. Cl. 98—33 **10 Claims**



A Duct and Blower Arrangement is herein described which duct may be formed to define an opening in a side wall portion thereof to receive the blower. A flange may be formed in the duct for operatively supporting the blower within the duct, upon inserting the blower therein. A closure member may be connected with the blower for covering the opening in response to the proper insertion of the blower into the duct.

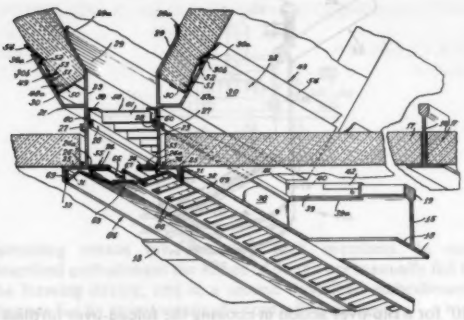
3,759,159
VENTILATING AIR DISTRIBUTING CHANNEL-DUCT JOINT

Joel R. Rachlin, 1785 Wedgewood West, Elm Grove, Wis., and Rudolph Otto Neudek, W. 271 N. 1275 Meadowbrook Rd., Waukesha, Wis.

Division of Ser. No. 10,508, Feb. 11, 1970, Pat. No. 3,673,945.
This application June 12, 1972, Ser. No. 262,041
Int. Cl. F24f *7/04*
U.S. Cl. 98—40 C **6 Claims**

The supporting grid (e.g., main and cross inverted tees) of a suspended ceiling also completely supports ventilation air-distributing apparatus which includes the air supply duct. This apparatus, which is completely assembled before mounting in the grid, comprises a lower air flow channel section formed of two extruded metal bars having vertical webs with hooks on the outside of the web defining ways into which the wings of a bracket project to hold the spaced bars in a channel assembly. A clip integral with the bracket hooks over the top of a grid tee and has gripper conformations to mate with a clip on the

opposite side of the tee to align channels. Along the top of the web of each bar are two outwardly extending spaced arms which are used to hold the sides of a fiberglass air duct. A releasable retainer clip held in engagement with detent means



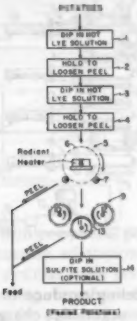
on the arms by the compressed resilient fiberblass locks the duct to the channel assembly. The air from the duct discharges out through the opening between the webs. At the bottom of the webs are flanges forming supports for ceiling panels and air flow control dampers.

3,759,160

PROCESS FOR PEELING POTATOES

Charles C. Huxsoll; Robert P. Graham, both of El Cerrito, and Merle L. Weaver, Martinez, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 11, 1971, Ser. No. 170,939
Int. Cl. A23n *7/02*
U.S. Cl. 99—233.3 **5 Claims**



The potato peel is loosened by a double treatment with hot lye solution, each treatment being followed by a holding period. The potato is subsequently exposed to radiant heat and the loosened peel is removed in the dry state by brushing.

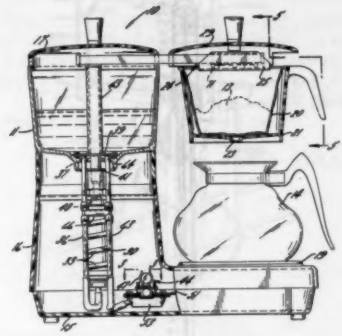
3,759,161

DRIP-TYPE COFFEE MAKER AND THE LIKE

Gordon R. Anderson, Rockton, Ill., assignor to Erling J. Hansen, Barrington, Ill.

Filed Mar. 1, 1972, Ser. No. 230,613
Int. Cl. A47j *31/057*; H01h *35/34*
U.S. Cl. 99—282 **6 Claims**

Water withdrawn from a supply tank is heated by an electric heater and is pumped upwardly through a distributor for discharge through a bed of ground coffee. An electric switch is responsive to the pressure of the water head in the tank and de-energizes the heater immediately upon substantially complete emptying of the tank so that no water remains in the



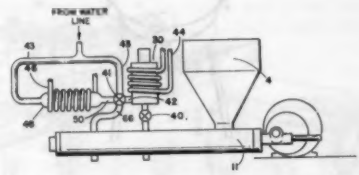
tank to form evaporation deposits. Downwardly inclined baffles underlie the outlet of the distributor and disperse the discharged water through the coffee bed while reducing clogging of the distributor outlet due to evaporation deposits.

3,759,162

COFFEE MAKER FOR REPETITIVELY BREWING SINGLE CUPS OF FRESH COFFEE

Keaton Bruce Maxwell, 3030 N. 7th St., No. 108, Phoenix, Ariz.

Continuation-in-part of Ser. No. 862,894, Oct. 1, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 168,432
Int. Cl. A47j *31/40*
U.S. Cl. 99—289 **4 Claims**



Apparatus is provided for brewing coffee a single cup at a time. A longitudinally traversing piston within a cylinder is provided with a transverse bore which registers, successively, with a hopper which fills the bore with coffee grounds, with opposed hot water receiving and dispensing ports, and with fresh water receiving and flushing ports. The hot water utilized in brewing the coffee is received from a hot water chamber which contains a predetermined measure of water and also compression spring means for forcing the water through the grounds at a controlled rate by acting upon a piston which functions as a deflectable wall of the hot water chamber. The hot water chamber is refilled after use and the dispensing piston reset by water under the line pressure which is sufficient to compress the spring to a predetermined position.

3,759,163

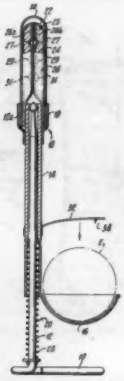
COMBINATION EGG HOLDER AND TIMER

Harold L. Walker, Whitestone, N.Y., assignor to Eggmatic Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 846,174, July 30, 1969, abandoned. This application Dec. 4, 1970, Ser. No. 95,222
Int. Cl. A47j *29/02*
U.S. Cl. 99—336 **20 Claims**

A boiled egg holder and timer in which the timing may be set for several types of boiled eggs, such as soft, medium and hard. The device is set in boiling water and a solid-to-liquid

trigger, which is out of direct contact with the boiling water, actuates the elevating mechanism whereby the egg is lifted out



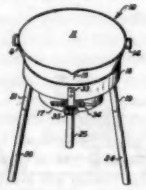
of the boiling water when the egg is boiled to the selected consistency.

3,759,164

INDOOR-OUTDOOR COOKER

Sirman Robinson, 2335 Whispering Pines Rd. Apt. No. 1, Albany, Ga.

Filed Oct. 13, 1971, Ser. No. 188,783
Int. Cl. A47j *37/12*
U.S. Cl. 99—413 **9 Claims**



A portable cooking apparatus for the preparation of food wherein a large cooking bowl is included as part of the apparatus. A fuel burner is centrally positioned below the bowl and within concentric baffle rings to provide a combustion and heat chamber to improve the efficiency of the burner. The curve-sided cooking bowl rests within the outer baffle ring and is spaced from this ring to obtain improved temperature control. Extendible legs are provided to position the cooking bowl at a convenient height for outdoor or indoor usage. An open mesh basket having a configuration similar to the bowl is positioned inside the bowl to facilitate the food handling. Various burner and valve combinations are included for use with the heat chamber.

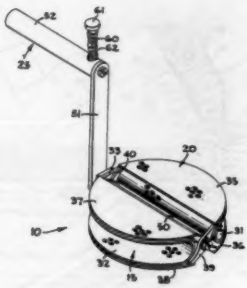
3,759,165

DEVICE FOR HOLDING TORTILLA DURING THE COOKING THEREOF

David C. Wallace, 1245 Peralta Dr., San Jose, Calif.

Filed Dec. 8, 1971, Ser. No. 205,847
Int. Cl. A47j *43/18*
U.S. Cl. 99—427 **3 Claims**

A device for holding folded-over tortillas while the tortillas are immersed in oil during the cooking thereof. The device comprises an inner support against which folded spaced tortillas are placed. The inner support is disposed within an outer retainer which serves to retain the tortillas against the inner support. A suitable handle carries the inner support and outer retainer so that an operator can immerse the tortillas in hot oil for cooking, such as in a deep fry process. Means are provided on the handle for rotating the inner support and outer retainer



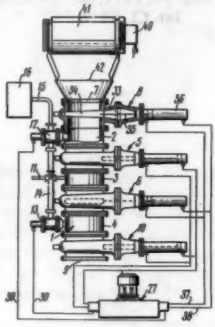
180° for a flip-over action in cooking the folded-over tortillas. The inner support and the outer retainer are constructed so that the tortillas are cooked in a preformed configuration suitable for use in the preparation of tacos.

3,759,166

APPARATUS FOR PEELING FRUITS AND VEGETABLES

Georgy Gavrilovich Trandin; Vladimir Andreevich Khrichev; Evgeny Petrovich Sykalo; Valery Petrovich Burakov, all of Krasnodar, U.S.S.R.; Vasily Ilich Krasnobaev, deceased, late of Krasnodar, U.S.S.R., and by Anna Nikolaevna Krasnobaeva, administratrix, Krasnodar, U.S.S.R.

Filed Apr. 16, 1971, Ser. No. 134,691
Int. Cl. A23n *7/00*
U.S. Cl. 99—472 **3 Claims**



An apparatus for peeling produce in which a chamber is gravity-fed and fruits or vegetables charged thereinto are hermetically sealed by gates and the chamber is supplied with a pressurized steam, and after subjecting the fruits or vegetables to steam, the pressure in the chamber is instantaneously dropped to a value below atmoshperic pressure by means of a vacuum condenser through the intermediary of a valve and the produce is peeled.

3,759,167

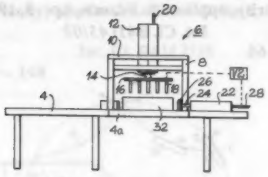
DOUGH TREATING MACHINE

Abner Melberg, 8 Borohov St., Givatayim, Israel

Filed June 19, 1972, Ser. No. 264,265
Claims priority, application Israel, Oct. 14, 1971, 37,928
Int. Cl. A21d *8/00*
U.S. Cl. 99—485 **7 Claims**

Apparatus for producing bread loaves and buns having a plaited appearance comprises a table for receiving the lumps

of dough for baking, and a forming device overlying the table. The forming device includes a plurality of forming members for simulating plaits on the lumps of dough, and advancing and

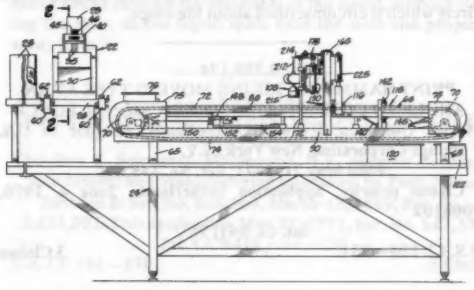


retracting means for actuating such members. In one described embodiment the lumps of dough are manually fed to the forming device, and in a second described embodiment, they are fed by an automatically controlled conveyor.

3,759,168
FRUIT SLICER

Maurice V. Johnson, Jr., Upland; Ned C. Carter, Chino; Kenneth W. Koenig; Frederick W. Riddington, both of Ontario; John M. Ross, Upland, and Ronald T. Smith, Ontario, all of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed June 17, 1971, Ser. No. 154,024
Int. Cl. A23n *15/00*
U.S. Cl. 99—545 **30 Claims**



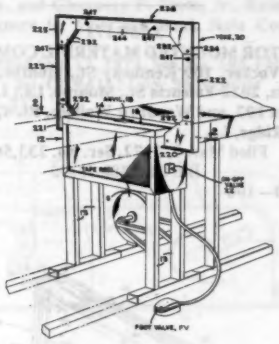
Slices of citrus fruit with peripheral portions of skin are conveyed through a succession of stations, including a station where a reciprocating circular knife severs central portions of the slices from surrounding ring-shaped portions of the slices. At a subsequent station the central fruit portions are bisected. At later stations the bisected fruit portions are discharged and the ring-shaped fruit portions are discarded.

3,759,169
STRAPPING MACHINE

George F. Goodley, Media, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 15, 1971, Ser. No. 198,862
Int. Cl. B65b *13/32*
U.S. Cl. 100—29 **12 Claims**

This machine straps a package with heat sealable plastic strapping. The strap is fed by geared feed and tension wheels around a yoke and against a stop. The strap is gripped against a side-retractable anvil on opposite sides of a vertically moving platen and knife assembly, while straddling a retractable tongue. A heated blade replaces the tongue whereupon the platen squeezes the heated joint and cuts the strap. The anvil and tongue are withdrawn for removal of the strapped

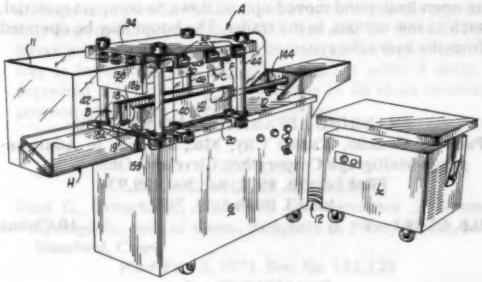


package. The platen, tongue, anvil and sealing blade are controlled by a set of cams on a linear actuator.

3,759,170
FOOD PRESS

Louis A. Bettcher, Amherst, Ohio, assignor to The Bettcher Industries, Inc., Birmingham, Ohio

Continuation-in-part of Ser. No. 67,482, Aug. 27, 1960, Pat. No. 3,683,797, which is a continuation-in-part of Ser. No. 878,439, Nov. 20, 1969, Pat. No. 3,687,067. This application Aug. 31, 1972, Ser. No. 285,479
Int. Cl. B30b *7/04*
U.S. Cl. 100—42 **17 Claims**



A press for shaping comestible products, such as meat and the like, having relatively movable die means which when in a predetermined position relative to one another provide a tubular die aperture of uniform cross section and a ram reciprocable therein. A channel-shaped stationary die means is carried by a plate-like support detachably connected to and exclusively carried by a cabinet-type base, and a movable die means at least partially receivable in the stationary die means is supported for movement towards and from the stationary die means. The movable die means is guided by the support for the stationary die means is moved by a toggle link mechanism and a cylinder and piston-type fluid actuator located beneath the support for the stationary die means. A supplementary guide means is provided below the support for the stationary die means to assist the support for the stationary die means in guiding the movable die means. The fluid actuator is beneath the stationary die means and pivotally supported, oriented to act predominantly transverse to the direction of die movement when the dies are fully separated, and pivots to act predominantly along the direction of die movement as the dies reach a closed position, providing a

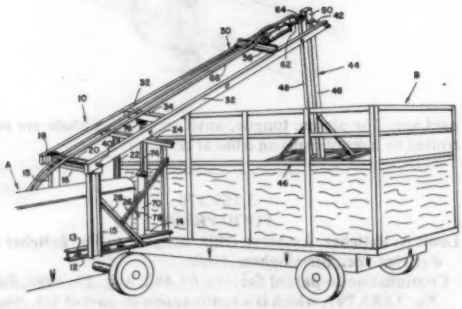
compact structure in which reaction forces from the actuator are applied to the stationary die support in a direction counter to the applied force of the dies.

3,759,171

TRACTOR MOUNTED MATERIAL COMPACTOR

Harold R. Vocker, 109 Kentucky St., Monroe, La.; David L. Marcovitz, 2022 Valencia St., Monroe, La.; I. L. Thompson, Rt. 4, Box 192, and Woodrow Wallace, Rt. 4, Box 404, both of Holly Ridge, La.

Filed Mar. 9, 1972, Ser. No. 233,569
Int. Cl. B30b *15/00*
U.S. Cl. 100—100 **4 Claims**



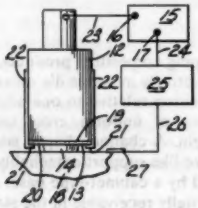
An apparatus for compacting loose material in an open container, such as a trailer, consists of a frame attached to a tractor with a boom and packer foot which can be extended over an open trailer and moved up and down to compact material, such as raw cottom, in the trailer. The boom may be operated from the hydraulic system of the tractor.

3,759,172

BRANDING APPARATUS AND METHOD

Paul W. Conklin, Kansas City, Mo., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Feb. 28, 1972, Ser. No. 229,931
Int. Cl. B44b *5/00*, *7/02*
U.S. Cl. 101—9 **10 Claims**



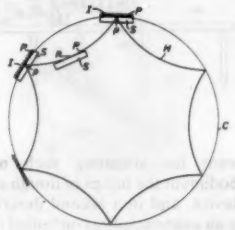
Indicia such as a vehicle identification number or unit serial number is electrically branded on a metal workpiece such as an automobile by a metal strip with embossed indicia. Electrical current from a welding current supply source is passed through the metal strip with the indicia in contact with the workpiece and this electrically brands the indicia onto the workpiece. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,759,173

MEANS FOR SUPPORTING AND PRINTING ON TICKET STRIP MATERIAL

Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France

Filed Mar. 30, 1971, Ser. No. 129,457
Claims priority, application France, Apr. 3, 1970, 7012290
Int. Cl. B41l *45/02*
U.S. Cl. 101—66 **10 Claims**



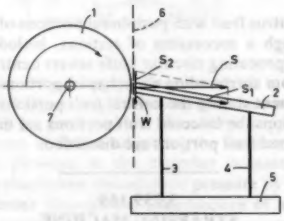
Printing machine for printing tickets, for example, in particular for prepayment installations providing automatic distribution of transportation tickets of the type in which a large number of pre-displayable indications are to be printed on the ticket and includes a series of fixed printing plates having modifiable signs or characters, at least one support bracket having a flat face for carrying the sheet to be printed, means whereby one point of the flat face is caused to follow a path having a shape closely related to that of a closed hypocycloid having a number of cusps, flat printing plates tangent to the circle which is circumscribed about the path being disposed at least at a number of cusps of the path and, means for ensuring that the flat face of the support bracket is also tangent to the circle which is circumscribed about the cusps.

3,759,174

PRINT HAMMER STRIKING MOVING TYPE AT AN ANGLE TO COMPENSATE FOR FRICTIONAL FORCE

Marius Quirijnen, Rijswijk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1971, Ser. No. 145,692
Claims priority, application Netherlands, June 4, 1970, 7008102
Int. Cl. B41j *9/02*
U.S. Cl. 101—93 C **3 Claims**



A printing device comprising a type support and one or more hammers cooperating therewith. Each hammer has an impact beam which is arranged so that it strikes the face of the type support at an angle in such manner that the reaction force exerted on the impact beam during a stroke of the impact beam against said face has a component, in addition to a component in the direction of the impact beam equal to the frictional force exerted on the impact beam.

3,759,175

DAMPENING APPARATUS WITH ROTOR FOR PROJECTING SPRAY

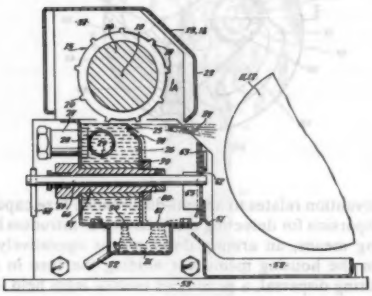
Arthur Graham Alsop, Sea Mills, Bristol, England, assignor to Strachan & Henshaw Limited, Bristol, England

Filed Mar. 8, 1971, Ser. No. 121,964

Claims priority, application Great Britain, Mar. 10, 1970, 11,479/70

Int. Cl. B41f 7/30

U.S. Cl. 101—148 6 Claims



A plate-dampening apparatus for a printing press projects a spray of dampening liquid onto a transfer roll. The apparatus includes a weir over which dampening liquid continuously spills, and a rotor having projections which are moved at speed to cut through the thickness of the liquid, without striking the weir, as the liquid spills over the wier and project a spray from it.

3,759,176

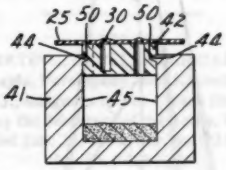
METHOD OF INTAGLIO PRINTING ON TACKY SHEET MATERIAL

Theodore F. Schwandt, Maplewood, N.J., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 806,980, March 13, 1969, Pat. No. 3,633,502. This application May 27, 1971, Ser. No. 147,330

Int. Cl. B41k 1/44, 1/30

U.S. Cl. 101—170 3 Claims



For applying characters to tacky sheet material, an apparatus comprising a holding means which releasably holds at least one printing block having at least one intaglio printing face formed by at least one image well, at least a portion of which forms a reservoir for containing a supply of freely flowable powdered ink. A flexible tacky sheet material is adhered over the printing blocks and ink adhered to the tacky surface to provide a desired character arrangement. The printed tacky sheet material can then be adhered to, or the characters transferred to, any desired surface such as signs, posters, etc.

3,759,177

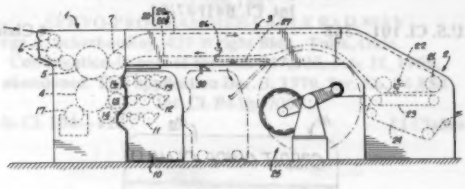
PRINTING PRESS WITH SHEET INSPECTION STATION

Ivaldo Gazzola, Lausanne, Switzerland; Salvatore F. D'Amato, Floral Park, and Chauncey P. Foote, Jr., Katonah, both of N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,195

Int. Cl. B41f 21/08; B65h 29/04

U.S. Cl. 101—232 5 Claims



The printing press shown has a printing station which discharges printed sheets above the head of the press operator. An overhead conveyor having spaced grippers picks up sheets discharged at the printing station and carries them to a sheet delivery station, where the grippers engage a gripper release mechanism and the sheets are dropped. The return reach of the conveyor, also above the operator's head, passes an inspection station between the sheet delivery station and the printing station. The gripper release mechanism at the delivery station is retractable to allow a selected sheet to pass the delivery station. At the inspection station, a fixed gripper release is provided which releases all the grippers on the passing conveyor. The inspection station includes a tray located under the conveyor to receive any sheet dropped there. The tray is pivoted along one edge and is movable between a sheet receiving position close to the conveyor, and an inspection position below the conveyor, where the operator may inspect the printed sheet. The tray may be movable by a motor controlled by a photoelectric cell on the tray so that the tray is lowered to the inspection position when a sheet is deposited there and the tray remains in its sheet receiving position when there is no sheet on the tray.

3,759,178

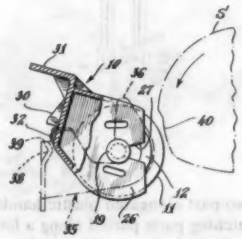
INKING ROLLER ASSEMBLY

Paul G. Franchinot, Stamford, and Lawrence J. Kresan, Springdale, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Feb. 3, 1971, Ser. No. 112,128

Int. Cl. B41f 31/30

U.S. Cl. 101—349 6 Claims



An inking roller for a rotary printing drum such as found in a postage printing machine for rotation on a shaft removably mounted on a separable holder. The holder, when it is to be assembled to the machine, is manipulated so that the ends of the shaft enter slots in a bracket fixed to the machine, after which the holder may be pivoted about the shaft into assembled relation to the bracket, with the roller in position to en-

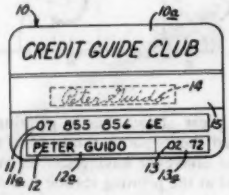
gage the printing surface of said drum and to rotate therewith. The rotation of the drum is such as to apply torque to the holder when rotating the roller, whereby to help maintain the holder assembled to the bracket.

3,759,179

CREDIT CARD AND SIGNATURE VERIFICATION SYSTEM

Peter Guido, 6386 No. Hiawatha Ave., Chicago, Ill.

Filed May 5, 1971, Ser. No. 140,462
Int. Cl. B41l 47/04
U.S. Cl. 101—368 **4 Claims**



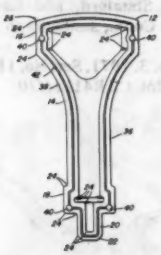
An improved system of signature identification for credit card users includes an embossed reverse image of the true signature of the authorized card holder. The card code or account number may also be embossed in reverse script on the print face of the card.

3,759,180

HOLLOW STAMP HANDLE

Edward J. Gibbons, 381 Summer St., Brighton, and Norman O. Daigle, Fitchburg, both of Mass., assignors to said Gibbons, by said Daigle, Brighton, Mass.

Filed Nov. 1, 1971, Ser. No. 194,650
Int. Cl. B41k 1/56
U.S. Cl. 101—405 **5 Claims**



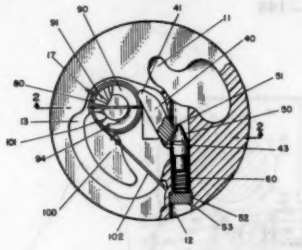
A hollow, two-part elongated plastic handle including first and second matching parts parted along a longitudinal plane, each of the parts including a cap portion of uniform wall thickness, a gently tapered neck portion having a uniform wall thickness, an intermediate section interconnecting the cap portion and the larger end of the neck portion, an enlarged shoulder portion at the narrow end of the neck portion and a tendon portion suspended from the shoulder portion and having uniform wall thickness and gently tapering to a smaller cross-section at its outer end, remote from the shoulder portion.

3,759,181

ANTI-DISTURBANCE FUZE

George P. Mellen, Wayzata, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1972, Ser. No. 219,620
Int. Cl. F42b 23/26
U.S. Cl. 102—8 **5 Claims**



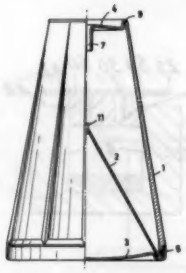
This invention relates to an anti-disturbance fuze capable of aerial dispersion for detecting the presence of intruders having a housing means, an arming delay means operatively positioned in the housing means for holding the fuze in a safe mode during dispersal, a pendulous inertial mass held in cantilever fashion as a disturbance sensing means proximate to the arming delay for detecting impulses to the fuze, and a firing means operatively connected to the sensing means for firing of an integral detonator. The fuze is immersed in a fluorocarbon liquid during the dispersal stage and is held in a safe mode by the arming delay means. Upon evaporation of the fluorocarbon liquid the arming delay, after a short interval, of time actuates the disturbance sensing means, the latter is then sensitive to subsequent impulses or movements of the device and operates a biased firing mechanism to cause a detonation.

3,759,182

HOLLOW CHARGE HAVING A DIRECTED EXPLOSIVE EFFECT

Reiji Levamaki, Helsinki; Mikko Vehvilainen, Jokela, and Tapani Suhonen, Helsinki, all of Finland

Division of Ser. No. 749,067, July 31, 1968, Pat. No. 3,613,582. This application June 9, 1971, Ser. No. 151,431
Int. Cl. F42d 3/04
U.S. Cl. 102—23 **4 Claims**



A method for carrying out underwater demolition work with a hollow charge constituted as a hollow body with a front, a back, an outer shell of frusto-conical shape and an inner shell of conical shape. The shells diverge toward the front of the body with the ends of said shells being joined at the front to define a space between the shells containing an explosive charge. A cover is mounted on the back of the body, and a base is mounted on the front of the body. The hollow charge is placed underwater on the submerged surface to be blasted and

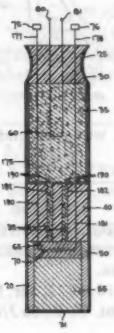
the explosive charge in the hollow body is detonated to cause the inner metal shell to be melted and a part thereof formed into a thin metal jet which is propelled through the front of the body to produce vaporization of the surrounding water.

3,759,183

MULTIPLE OPTION ELECTRIC DETONATOR

Maurice Apstein, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1971, Ser. No. 209,057
Int. Cl. F42b *3/16*
U.S. Cl. 102—28 R **5 Claims**



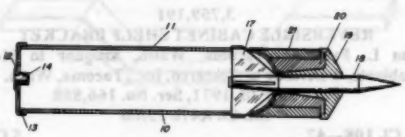
A multiple option detonator comprising an instantaneous electric detonator and a delay electric initiator connected to an electric circuit which provides a means for starting the instantaneous detonator and the delay initiator simultaneously and alternatively. The instantaneous detonator and the delay initiator are juxtaposed in tandem in a single structure. The instantaneous detonator comprises a base charge; a primer charge; and an element of high electrical resistance. The delay initiator comprises a pyrotechnic mixture, a molded insulating plug, and a second element of high electrical resistance. The molded insulating plug has several holes and passageways in it. The holes are filled with a portion of the pyrotechnic mixture. This pyrotechnic mixture is capable of initiating the primer charge in the instantaneous detonator. Another portion of the pyrotechnic delay charge is located behind the insulating plug and is ignitable by the element of high electrical resistance therein. By selectively energizing the proper element either an instantaneous function or a delay function may be achieved. If both bridges are fired simultaneously, the delay provides a backup in case the instantaneous bridge fails.

3,759,184

SELF-OBTURATING, EXPELLABLE CARTRIDGE CASE

Raymond S. Blajda, Parsippany, and Kenneth D. Rubin, Sparta, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 27, 1972, Ser. No. 221,283
Int. Cl. F42b *5/10*
U.S. Cl. 102—38 **7 Claims**



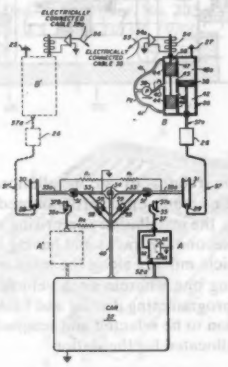
A novel cartridge possesses a fin-stabilized, high velocity projectile attached to a propellant casing, which is self-obturating and expelled from the weapon together with the projectile and separated from the latter on muzzle exit. The projectile is located such that its finned end is within the casing and its front end projects beyond the closed front end of the casing which has a ventable closure at its breech end. Sabot means are removably mounted on the projecting part of the projectile such that they abut against the front end of the casing and are thrown off by aerodynamic forces and centrifugal force of low spin generated by engagement of the casing with the rifling.

3,759,185

SERVO-PROGRAMMED CABLE RAILWAY

Serge A. Scherbatskoy, 427 Wright Bldg., Tulsa, Okla.

Continuation-in-part of Ser. No. 847,530, July 31, 1969, abandoned. This application Dec. 3, 1970, Ser. No. 94,858
Int. Cl. B61b *7/06*
U.S. Cl. 104—112 **11 Claims**



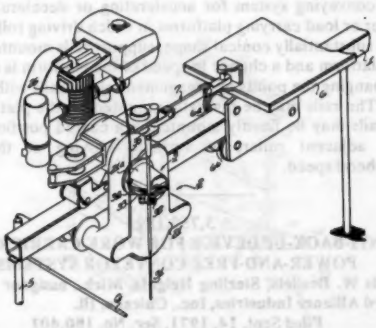
A transportation system having a cable support means, a car carried on the cable, a means for generating a guidance signal relative to a reference path of travel, and means responsive to the signal for acting upon the suspension means to maintain the travel of the car in a selected course.

3,759,186

MONORAIL RAILWAY TRANSPORTATION SYSTEM

Minoru Sugimoto, 141-1 Minamikoto, Jodo-cho, Jodo-gun, Okayama-ken, Japan

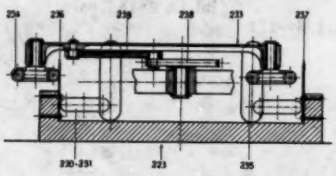
Filed Oct. 26, 1971, Ser. No. 192,229
Int. Cl. B61b *13/04*; B61c *11/04*, *13/04*
U.S. Cl. 104—120 **2 Claims**



A hauling system with a monorail comprises a rail body having a rack portion disposed under said rail body, and a tractor with an automatically disengagable clutch controling the

speed of an engine having upper and lower rollers between which said rail body is pinched and a driving wheel with a plurality of engaging members circularly arranged and intermeshed with said rack portion.

3,759,187
RAIL VEHICLE STEERING SYSTEM
Jean Gayot, Meudon, (Hauts de Seine), France, assignor to Engins Matra, Paris, France
Filed Nov. 2, 1970, Ser. No. 85,963
Int. Cl. B61b *13/00*; E01b *25/28*
U.S. Cl. 104—130 **1 Claim**



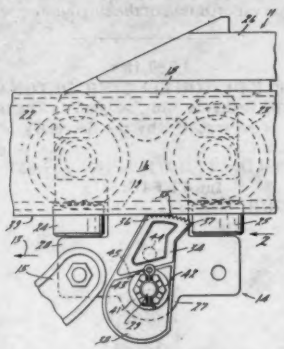
This invention relates to an installation for continuous transport by trains made up of programmed (computer-controlled) vehicles, the installation comprising a main track serving stations via secondary tracks and having trains made up of at least one vehicle moving along the main track, the installation further being one wherein each vehicle is fitted with its own means for programming driving and braking, allowing the destination station to be selected and reached after extraction of the vehicles allocated for the station.

3,759,188
VARIABLE SPEED CONVEYOR
Harry E. Woods, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 4, 1971, Ser. No. 103,656
Int. Cl. B61b *13/00*
U.S. Cl. 104—168 **17 Claims**

A conveying system for accelerating or decelerating passenger or load carrying platforms in which driving rollers, having a substantially conical shape, support rails mounted under the platform and a change in speed of the platform is obtained by changing the points of engagement of the rails with the rollers. The rails may be pivotally mounted on the platforms or the rails may be fixedly mounted in a canted position to engage adjacent rollers at surfaces moving at the same peripheral speed.

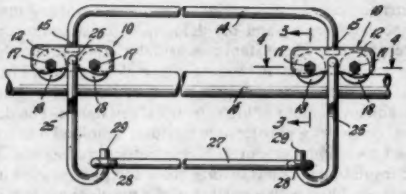
3,759,189
ANTI-BACK-UP DEVICE FOR WORK CARRIERS ON POWER-AND-FREE CONVEYOR SYSTEMS
Dennis W. Desilets, Sterling Heights, Mich., assignor to Standard Alliance Industries, Inc., Chicago, Ill.
Filed Sept. 14, 1971, Ser. No. 180,401
Int. Cl. B61b *13/00*
U.S. Cl. 104—172 S **2 Claims**

A work carrier for a power-and-free conveyor system has anti-back-up means comprising a pair of serrated cams mounted on the carrier frame and weight-biased into one-way



frictional engagement with the undersurfaces of the track channels.

3,759,190
TROLLEY WHEEL
William K. Harvey, Trumbull, Conn., assignor to Fair-Conn, Inc., Bridgeport, Conn.
Filed Feb. 14, 1972, Ser. No. 225,746
Int. Cl. B61b *3/00*
U.S. Cl. 105—150 **1 Claim**

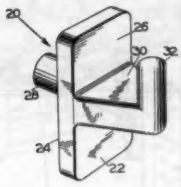


A trolley for pipe rail conveyor systems provided with a plurality of rail-engaging wheels, each wheel comprising two companion wheel sections which are mounted for independent rotation which occurs when the trolley traverses a curved portion of the pipe rail, said wheel sections when so mounted forming between them a circumferential groove to receive the pipe rail on which the wheel is to ride, the inner end of said wheel sections being spaced from each other, the groove having a contour formed by arcs having a common center and a radius equal to the radial distance from said common center to the circumference of the pipe rail, the contour of the groove including straight outer portions which are continuations of said arcs and tangent to said arcs, said tangent portions serving to resist lateral bodily movement of the wheel sections or swinging movement of the trolley on the wheel about the axis of the pipe rail.

3,759,191
REVERSIBLE CABINET SHELF BRACKET
Dixon L. Freeman, Tacoma, Wash., assignor to Monitor Cabinets, A Division of Comerco, Inc., Tacoma, Wash.
Filed July 28, 1971, Ser. No. 166,858
Int. Cl. A47b *23/00*
U.S. Cl. 108—42 **5 Claims**

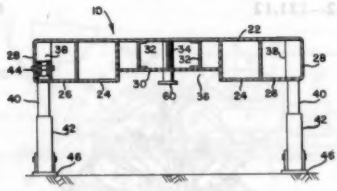
A bracket for supporting cabinet shelves is secured to the cabinet side wall and is rotatable angularly through 180° between two positions. In one, a pin on the bracket extends upwardly and is insertable in a shelf socket for releasably in-

terlocking the shelf to the cabinet side wall. In the other, the pin extends downwardly in a disengaged condition, permitting



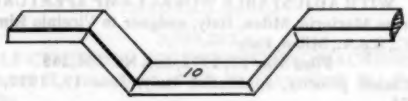
free separation of the shelf from the cabinet side wall. In both positions of the pin, the shelf is supported by the bracket in substantially the same horizontal plane.

3,759,192
LOAD PALLET CONSTRUCTION
Carl W. Oehler, Deerfield Beach, Fla., assignor to Oehler Steel Company, Akron, Ohio
Filed Jan. 28, 1971, Ser. No. 110,487
Int. Cl. A47b *23/00*; B60p *1/64*
U.S. Cl. 108—44 **4 Claims**



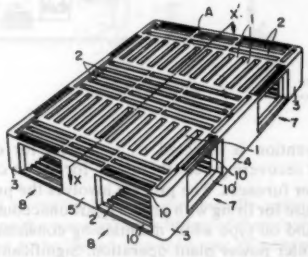
A load pallet is constructed of modular sections. The individual modular units are each of box girder construction with the sides of the sections being formed of deeper box girders than the center portions. A number of modular sections are joined together to construct a pallet of the desired length with solid end plates being provided between each of the adjacent sections. The pallets are suitable for any use such as load bearing pallets in a tractor-trailer pallet load carrying assembly.

3,759,193
PALLET SKIDS
Ethridge S. Branch, 512 Mitchell Dr., Adel, Ga.
Filed Aug. 5, 1971, Ser. No. 169,450
Int. Cl. B65d *19/00*
U.S. Cl. 108—51 **3 Claims**



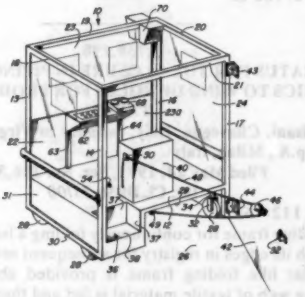
Pallet support members with recessed-shaped sections made from a sheet material of uniform thickness and having a pair of V-shaped parallel channels on one surface of the sheet material, spaced apart from each other a predetermined distance and a second pair of V-shaped parallel channels in the second surface of the sheet material formed intermittent and parallel to the first pair of channels and spaced apart therefrom a predetermined distance whereby said sheet material being connected along the apices of the V-shaped channels to produce a recess-shaped section when the surfaces between immediately adjacent channels are angularly displaced to substantially close said V-shaped channels thereby defining a pallet support member as disclosed herein. Preferably the support members are formed in pairs in longitudinal frame members of a platform.

3,759,194
PLASTIC PALLET
Mitsuru Fujii, Saitama-ken, Urawa-shi, and Izumi Narusawa, Takaido, Suginami-ku, Tokyo, both of Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan
Filed Dec. 7, 1971, Ser. No. 205,639
Int. Cl. B65d *19/38*, *19/00*
U.S. Cl. 108—58 **1 Claim**



A four-side insertion pallet of one-piece construction formed from plastics having a suitable rigidity which can receive the insertion of the fork or fingers of a forklift from any of its four sides.

3,759,195
PROTECTIVE ENCLOSURE
Paul Hitrys, 92 Columbia St., Brookline, and Joshua S. Wainer, 26 Prince St., Milton, both of Mass.
Filed July 6, 1972, Ser. No. 269,445
Int. Cl. E05g *3/00*
U.S. Cl. 109—9 **2 Claims**



A bulletproof enclosure for use in a bank for stationing at least one guard therein includes access means so that the

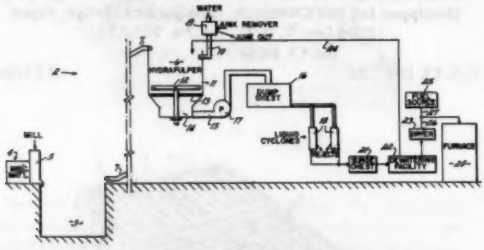
guard can enter the enclosure, communication means coupled to a local police station, for example, and loudspeakers, one of which may be disposed outside of the bank. The enclosure is preferably pivotable toward and away from a wall proximate to the tellers location in the bank and may be secured against the wall after the guard has entered the enclosure.

3,759,196

REFUSE DISPOSAL AND HEAT RECOVERY IN STEAM BOILERS

Paul W. Spaite, Cincinnati, Ohio, assignor to A. M. Kinney, Inc., Cincinnati, Ohio

Filed Dec. 13, 1971, Ser. No. 207,143
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **12 Claims**



This invention is directed to a process for disposing of refuse and recovering heat therefrom for use in conventional steam boiler furnaces. The process involves the production of pulped refuse for firing with primary carbonaceous fuels of the gas, coal and oil type while maintaining consistency and stability in boiler power plant operation. Significant economies and ecological advantages are also achieved in the two-fold function of waste disposal and heat recovery in accordance with the method disclosed.

3,759,197

PROCESS FOR THE AGGLOMERATION OF PARTICULATE MATERIALS

William J. I. Bracke, Ransbeekstraat 120, Bruxelles, Belgium

Filed Sept. 22, 1971, Ser. No. 182,905
Int. Cl. E02d *3/12*
U.S. Cl. 111—1 **10 Claims**

A process for the agglomeration of particulate material comprising contacting said particulate material with an aqueous solution of polymer of acrylamide and an aqueous solution of dialdehyde having the formula $O=CH-(R)_n-CH=O$, where R is a divalent hydrocarbon radical having from 1 to 8 carbon atoms, and n is 0 or 1, at a temperature in the range from 0° to 100°C.

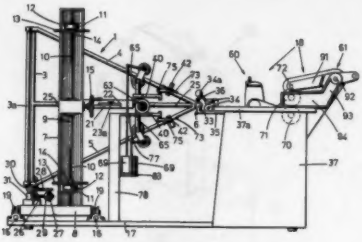
3,759,198

APPARATUS FOR THE CLOSURE IN PIPING OF OPENED FABRICS TO WIND UP ROLLS FOR PRODUCING BIAS TAPES

Luigi Pisani, Cilavegna, Italy, assignor to Virginio Rimoldi & C., S.p.A., Milan, Italy

Filed May 24, 1971, Ser. No. 256,387
Int. Cl. D05b *23/00*
U.S. Cl. 112—63 **7 Claims**

A folding frame for continuously folding a length of cloth in half with its edges in registry for subsequent sewing in which a triangular like folding frame is provided about which the traveling web of textile material is fed and then doubled back upon itself. The frame is mounted so that its incoming edge extends in a substantially vertical direction and the two sides forming the remainder of the triangular shape converge from the upper and lower ends of the incoming side to a terminal apex. This folding frame is mounted so it can be moved laterally back and forth with respect to the supporting structure and can also be oscillated about its own horizontal and



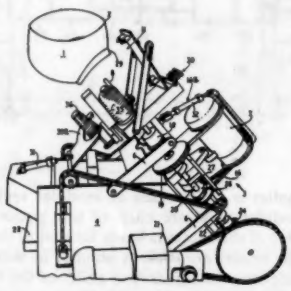
vertical axes. Sensing means to automatically respond to lack of registry at the cloth edges is provided together with means to move the edges back into registry when required.

3,759,199

APPARATUS FOR EDGE FINISHING BODY OPENING IN GARMENTS

Harold Barry Lee, Heidelberg, Australia, assignor to Bond's-Wear Ptg. Limited, Camperdown, New South Wales, Australia

Filed Mar. 30, 1972, Ser. No. 239,520
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **6 Claims**



An edge finishing machine for an opening in a garment, the machine comprising a table movable on a frame by cam means, a sewing machine mounted on a shaft rotatably supported on the table. The cam means and the rotational movement of the sewing machine causing the sewing machine needle to traverse a path which is a duplicate of the profile of the garment opening and a garment support located adjacent the machine.

3,759,200

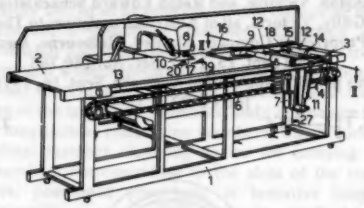
APPARATUS FOR PRODUCING STITCHING PATTERNS WITH ADJUSTABLE WORKCLAMP APERTURES

Nerino Marforio, Milan, Italy, assignor to Virginio Rimoldi & C., S.p.A., Milan, Italy

Filed May 17, 1972, Ser. No. 254,245
Claims priority, application Italy, June 19, 1971, 26081 A/71
Int. Cl. D05b *21/00*; F01b *15/00*
U.S. Cl. 112—121.15 **7 Claims**

A clamping device for moving a fabric workpiece along a supporting surface and through a sewing area in an apparatus for producing stitching patterns in the fabric. The clamping device being provided with control elements for varying the

distance between the fabric engaging surface thereof and the supporting surface to effect insertion, adjustment, clamping



and release of the fabric as well as return of the clamping device to its initial position for repeating the cycle.

3,759,201

RIBBON POSITIONING APPARATUS FOR USE IN THE AUTOMATIC MANUFACTURE OF AN ANNULAR RIBBON

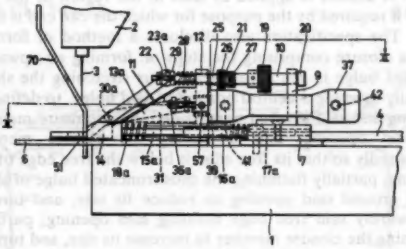
Sven-Erik Backlund, Uddevalla, Sweden, assignor to Sven Gerhard Anderson, Ljungskile, Sweden

Filed Apr. 12, 1972, Ser. No. 243,146

Claims priority, application Sweden, Apr. 15, 1971, 4882/71

Int. Cl. D05b *21/00, 35/06*

U.S. Cl. 112—121.27 **12 Claims**



A positioning apparatus is provided, in conjunction with a known apparatus for cutting a length of elastic ribbon and for overlapping the ends thereof to form an annular loop of ribbon, to maintain the overlapped ends in proper parallel and overlapping relation to one another during the sewing together of said overlapped ends by a sewing machine. The positioning apparatus comprises guide means associated with the movable presser foot of the sewing machine for guiding the overlapped ends to predetermined positions relative to one another as said presser foot is moved into pressure engagement with said overlapped ends. The apparatus is operative to move the presser foot downward to a first position in which it presses the overlapped ribbon ends relatively slightly against an underlying support, whereafter the presser foot is moved downward further to a sewing position in which it firmly presses the overlapped ribbon ends against said support.

3,759,202

SELF-CENTERING FOOT FOR SEWING MACHINES

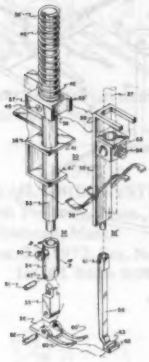
Ferdinand H. Jean-Blanc, 2719 N. Thirty-Sixth St., Boise, Idaho

Filed Oct. 21, 1971, Ser. No. 191,298

Int. Cl. D05b *29/08*

U.S. Cl. 112—239 **4 Claims**

The present invention comprises a pressure foot assembly operable to resiliently urge layers of fabric downwardly against a feed dog assembly of a sewing machine and which may be urged rearwardly in response to layers of fabric tending to gather or "pucker" therebetween. The pressure foot assembly of this invention is operable to be instantaneously lifted from the layers of fabric in response to movement of the needle shaft operation and, thereby, tends to avoid stretching fabric and layers of fabric advanced between the pressure foot assembly of this invention and a feed dog assembly. In order to maintain a substantially uniform pressure upon layers of fabric being advanced through the machine, a holding foot assembly



is provided to resiliently urge downwardly against layers of fabric during the instantaneous lifting of the pressure foot assembly, and to be raised upwardly out of engagement with layers of fabric in response to movement of the needle bar shaft alternately with the pressure foot assembly, the pressure foot assembly and the holding foot assembly being operable to permit sewing of stretchable elastic fabrics without stretching the respective layers. The holding foot assembly is juxtapositioned so as not to coact with the feed dog assembly.

3,759,203

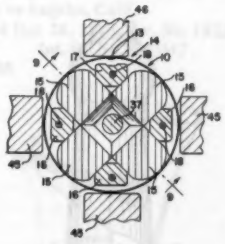
CONTAINER SHAPING APPARATUS

Henry E. Frankenberg, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,742

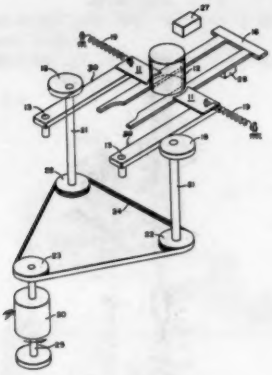
Int. Cl. B21d *51/26*

U.S. Cl. 113—1 G **4 Claims**



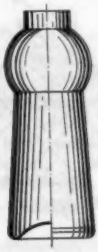
An apparatus for reforming a cylindrical can body to a generally rectangular body. The apparatus includes means for holding the side seam clamped while the can body is being stretched into rectangular shape.

3,759,204
CUTOFF MECHANISM FOR CONTAINER CLOSURE LINING MACHINES
William B. Harrison, Dedham, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.
Filed Nov. 9, 1970, Ser. No. 88,019
Int. Cl. B21d *43/00*
U.S. Cl. 113—114 BE 2 Claims



An improved cutoff mechanism for container closure lining machines having reciprocating slides which feed closures to a rotary chuck. The knives which cut off a closure from the infeed stack and drop it on to the work surface, to be fed to a chuck by fingers on the slide, move transversely to the slide axis of the machine. Compression or tension springs push the knives outwardly. Cams force the knives into cut-off position. Alternatively, the cams may carry a slot cam track, and the knives carry a cam roller.

3,759,205
PROCESS FOR MAKING METALLIC HOLLOW ARTICLES
Gilbert Dolveck, Avenue Jean Gaures, F. 38 Beaurepaire, France
Continuation-in-part of Ser. No. 739,400, June 24, 1968, abandoned. This application June 4, 1970, Ser. No. 43,548
Claims priority, application Switzerland, June 26, 1967, 9050/67
Int. Cl. B21d *51/00*
U.S. Cl. 113—120 H 11 Claims

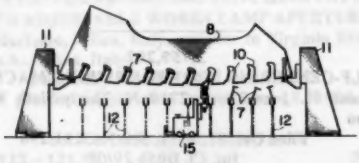


A process for making a hollow metallic article from a tubular blank closed at one end, comprises deforming the entire periphery of the wall of the said blank over its entire length from one end to the opposite end.

3,759,206
PUSH-IN EASY-OPENING CLOSURES
Alan George Dalli, Warrandyte, Victoria; Michael Debenham, Frankston, Victoria, and Ralph Edward Schackleford, Ferntree Gully, Victoria, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia
Filed Sept. 15, 1971, Ser. No. 180,785
Claims priority, application Australia, Sept. 16, 1970, 2556
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 C 21 Claims

This specification dislcoses an easy-opening closure for a can end which comprises an opening formed by partially severing a portion from the can end to leave the portion attached thereto by an integral neck, and a closure member formed from said severed portion and which is larger than said opening. The sheet metal adjacent the free edge of the opening is downwardly turned while the sheet metal adjacent the free edge of the closure member is upwardly turned, said free edges being in contact with or in close proximity to each other. A sealant is applied at least in the region of the free edges if required by the purpose for which the can end is to be used. The specification also discloses a method of forming such a closure comprising the steps of: forming an upwardly directed bulge in the sheet metal, thus stretching the sheet; partially severing a central portion of said bulge, to define an opening and said severed portion defining a closure member for said opening, and displacing the closure member downwardly so that its free edge is below the free edge of the opening; partially flattening the thus truncated bulge of sheet metal around said opening to reduce its size, and turning downwardly said free edge defining said opening; partially flattening the closure member to increase its size, and turning upwardly said free edge of the closure member, the free edge portion of said closure member being in contact with or in close proximity to said free edge defining said opening, and applying a sealant at least in the region of the free edges of the opening and the closure member to seal the closure if required by the purpose for which said container member is to be used.

3,759,207
APPARATUS FOR ASSEMBLING CURVED SKIN BLOCK FRAMES OF A HULL AND A METHOD THEREFOR
Kiyoshi Terai, Ashiya-shi, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan
Filed Mar. 8, 1971, Ser. No. 122,014
Claims priority, application Japan, Mar. 7, 1970, 45/19546
Int. Cl. B63b *3/18*
U.S. Cl. 114—65 R 2 Claims



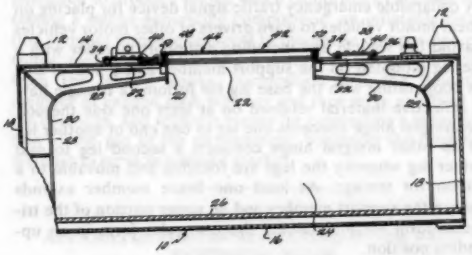
Apparatus for assembling curved skin block frames of a hull, which comprises (1) sets of oppositely disposed devices for positioning slotted transverse reinforcing members which

have a transverse member clamping mechanism for holding the transverse members near both ends thereof in such a manner that the slots of the transverse members face downwardly and so as to position several transverse members therebetween, a transverse member supporting stool, a mechanism for adjusting the oblique angles of the transverse members, and a mechanism for adjusting the positions of the elevational direction, longitudinal direction and transverse direction of the transverse members; and (2) a device for positioning longitudinal reinforcing members, which comprises a longitudinal member clamping device for carrying longitudinal members corresponding to the slots of the transverse members, positioned previously in tentative longitudinal member positions, so as to insert the longitudinal members from the underside of the transverse members into the slots thereof, a longitudinal member supporting stool, a mechanism for adjusting the oblique angle of the transverse direction of the longitudinal members, a mechanism for adjusting the oblique angle of the longitudinal direction of the longitudinal members, a mechanism for adjusting the position of the longitudinal direction by lifting the longitudinal members, and an assembly for carrying the longitudinal members from the tentative longitudinal member positions to the slot positions; and a method therefor.

3,759,208
MULTI-CARGO BARGE

Cecil M. Keeney, New Orleans, La., assignor to Equitable Equipment Company, Inc., New Orleans, La.

Filed Apr. 5, 1971, Ser. No. 131,379
Int. Cl. B63b *25/02*
U.S. Cl. 114—73 **2 Claims**



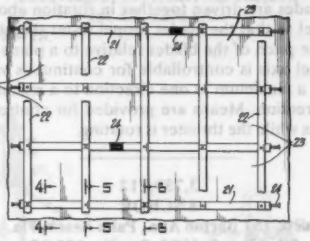
A stackable lighter having a deck is provided with a main hatch having a cover and extending the entire length of the lighter along the centerline thereof. The hatch is of a width about one-third that of the lighter and opens to a hold having a length co-extensive with the hatch and width equal to that of the lighter. On the deck at either side of the hatch are disposed a plurality of small hatches properly sized for grain loading equipment and provided with removable covers.

3,759,209
GRID SYSTEM FOR EXTERNAL INSULATION TANKER

Frank J. Iarossi, Middletown, N.J., and Walter C. Cowles, Cobnan, Surrey, England, assignors to Esso Research and Engineering Company, Linden, N.J.

Filed May 18, 1971, Ser. No. 144,422
Int. Cl. B63b *25/16*
U.S. Cl. 114—74 **12 Claims**

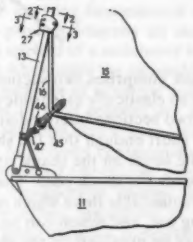
A tanker vessel intended especially for the transport of liquid cargoes at temperatures differing from ambient temperature having external insulation covering the midbody of the vessel. The insulation is secured to the vessel midbody by means of a grid of intersecting frames or firring members attached to the vessel hull with the insulating material being fitted, foamed or sprayed in the lattice spaces defined by the intersecting members. An outer covering or skin may be disposed over the insulation to provide a watertight and abrasion resistant skin that will prevent damage to or deterioration of the external insulation.



3,759,210
SAIL GUIDE SYSTEM

Harry T. Davis, West Peabody, Mass., assignor to Hood Sailmakers, Inc., Marblehead, Mass.

Filed Jan. 21, 1972, Ser. No. 219,787
Int. Cl. B63h *9/04*
U.S. Cl. 114—105 **5 Claims**

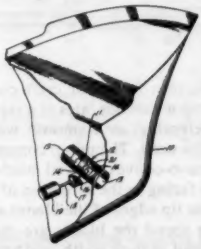


In the system disclosed herein, a generally C-shaped sail guide member, used for leading a bead on the luff of a sail into a keyway, is arranged so that the open side or gap in the C can face to either port or starboard. In raising this sail, the sail then bends around one or the other of a pair of rounded sail-engaging elements mounted on either side of the mouth of the C-shaped guide.

3,759,211
CONTROLLABLE PITCH TUNNEL THRUSTER FOR SHIP POSITIONING

Francis A. Kuntz, Jr., San Pedro, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Filed Oct. 26, 1971, Ser. No. 192,036
Int. Cl. B63h *25/42*
U.S. Cl. 114—148 **7 Claims**



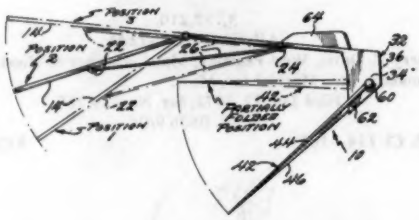
A ship is described having a transverse thruster arranged in a tunnel running athwartship preferably, for example, near the

bow so as to enhance steering or for slowly moving the ship sideways. The thruster comprises a movable portion of the tunnel wall having inwardly extending blades. The movable wall and blades are driven together in rotation about the axis of the tunnel so that the blades propel water therethrough. In addition, the pitch of the blades relative to a plane transverse to the tunnel axis is controllable for continuous variation of thrust from a maximum in one direction to a maximum in the opposite direction. Means are provided for controlling pitch of the blades while the thruster is rotating.

3,759,212
ANCHOR

David G. Cluett, 151 Barton Ave., Palm Beach, Fla.

Filed Feb. 2, 1972, Ser. No. 222,856
Int. Cl. B63b *21/40*
U.S. Cl. 114—208 10 Claims

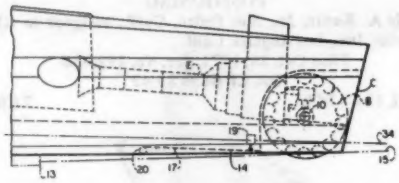


The anchor shank comprises two sections, hinged together and provided with an elastically extensible shock cord secured at its ends to the two sections intermediate the ends thereof. The shock cord is short enough that the shank is bowed at its hinge, unless tensile stress on the shank straightens the shank and elastically extends the shock cord. The anchor preferably includes a single, replaceable fluke which is pinned at an angle to the shank during use, and which can be folded for storage. An angled skeg may be provided on the shank to assist in upsetting the anchor to a working position.

3,759,213
TANGENTIAL FLOW PULSE JET PUMP PROPULSION FOR WATER CRAFT

John C. Quady, La Jolla, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Jan. 28, 1971, Ser. No. 110,522
Int. Cl. B63h *11/02*
U.S. Cl. 115—16 19 Claims

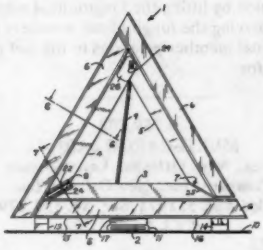


Propulsion mechanism for water craft comprises a power driven pulse jet pump which operates at a selected shallow immersion depth, preferably on a smooth wake created by a planing surface of the craft. The pump comprises a propulsion wheel having concavo-convex curved blades mounted with their concave sides facing in the direction of forward rotation of the wheel, and the tip edges of the blades are sharpened. At and above cruising speed the blades are immersed substantially less than one half of their width, and are so angularly adjusted that each blade slices cleanly into the wake and in effect severs a "chip" of water therefrom in somewhat the same manner as a blade of a power wood planer or metal-milling cutter. These water "chips", by inertia, are forced upwardly and around the concave faces of the blades, so that by a combination of the rotative orbit of the blades, and their curved conformation, the "chips" are discharged rearwardly through the air at a velocity greater than the tip speed of the blades, thereby generating a reaction thrust which propels the craft forward. The wheel preferably is vented to act additionally as an air impeller so as to discharge a high velocity air stream rearwardly along with the pulse jet stream of water "chips."

3,759,214
ONE PIECE TRIANGULAR SIGNAL DEVICE

Robert V. Evans, Independence; Thomas M. Stiles, and Kenneth C. Ploeger, both of Blue Springs, all of Mo., assignors to Rupert Manufacturing Company, Inc., Blue Springs, Mo.

Filed Oct. 18, 1971, Ser. No. 189,988
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P 8 Claims

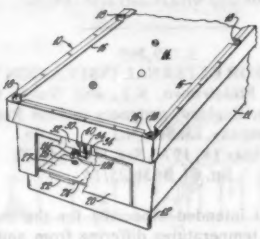


A collapsible emergency traffic signal device for placing on or near motor vehicles to warn drivers of other motor vehicles to avoid the vehicle and including a support member with a base leg mounted on the support member and a pair of side legs cooperating with the base leg for forming a triangle having reflective material retained on at least one side thereof. One integral hinge connects one leg to one end of another leg and an other integral hinge connects a second leg to said another leg whereby the legs are foldable and movable to a position for storage. At least one brace member extends between the support member and an upper portion of the triangular form for maintaining the triangular form in an upstanding position.

3,759,215
ALARM SYSTEM AND APPARATUS

Stuart C. Bagley, Tipton, Mo., assignor to Questor Corporation, Toledo, Ohio

Filed July 28, 1971, Ser. No. 166,883
Int. Cl. G08b *13/08*
U.S. Cl. 116—76 7 Claims



The disclosure embraces a system or apparatus particulary for use with a receptacle or body such as a coin box associated with a game device or vending machine for automatically providing an audible alarm for the purpose of combating

thievery upon attempts by unauthorized persons to pilfer, dislodge or open the receptacle or coin box.

3,759,216

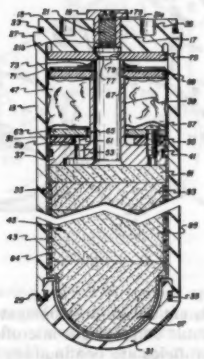
SMOKE FLARE SIGNALLING AND MARKING DEVICE

Victor M. Sanders, deceased, late of Asheville, N.C. (by Nellie M. Sanders, executrix), and Andrew A. Scotchie, Asheville, N.C., assignors to Northrop Carolina, Inc., Swannanoa, N.C.

Filed Dec. 4, 1970, Ser. No. 95,111

Int. Cl. G09f *9/00*

U.S. Cl. 116—124 B **7 Claims**



A visual signal device which is floatable on water when energized to produce smoke which comprises a cartridge containing a smoke-generating composition, an inflatable floatation member disposed adjacent to the smoke composition cartridge, means for conducting a portion of the gas generated from the ignited smoke composition into the floatation member to expand such member and thus serve as a float for the cartridge, and separate means for conducting a major portion of the gas to the environment, bypassing the floatation member to serve as a smoke marker.

3,759,217

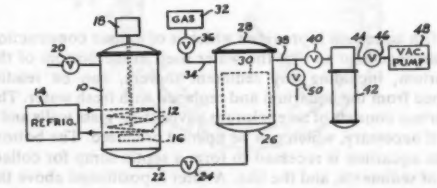
APPARATUS FOR IMPREGNATING WOOD WITH SYNTHETIC RESIN

Karl H. Wiegmann, Huntingdon Valley, Pa., assignor to Hull Corporation, Hatboro, Pa.

Filed June 5, 1969, Ser. No. 830,655

Int. Cl. B05c *11/14*

U.S. Cl. 118—5 **10 Claims**



Pieces of wood in a perforate container in a chamber are evacuated and then immersed in a liquid mixture of monomeric synthetic resin and catalyst under elevated pressure. The container of resin-impregnated wood then is transferred to a rotary chamber and tumbled under elevated gas pressure and controlled polymerization temperature to effect polymerization of the impregnated resin.

3,759,218

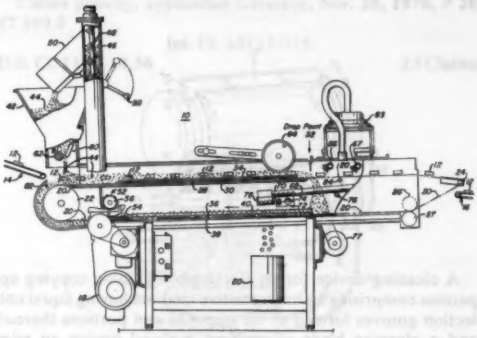
BREADING APPARATUS

Harald O. Korstvedt, 116 Winthrop Rd., Brookline, Mass.

Filed Aug. 3, 1971, Ser. No. 168,698

Int. Cl. A21c *9/04*

U.S. Cl. 118—18 **4 Claims**



An apparatus for applying comminuted material such as breading to a food product whereby an abundance of comminuted breading is applied to a moistened food product until thoroughly covered, whereupon the excess loose breading and any resulting lump particles of moisture and breading and/or undesirable particles of food product are removed and immediately sifted to separate said excess loose breading from said lump particles to prevent contamination of said excess loose breading by extended association with said particles on conveyor or other transporting means. A vibrating sifter device is utilized to effect separation of the excess loose breading from the lump particles immediately following the breading operation before transporting said mixture via belts or other transporting means.

3,759,219

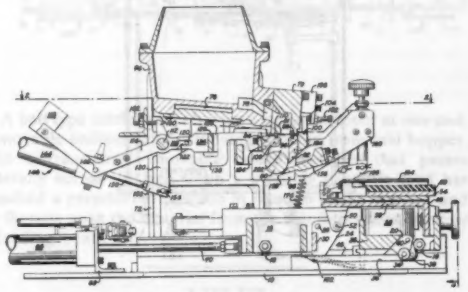
COATING MACHINE

Carl H. Brastow, Foxborough, Mass., assignor to Jacob S. Kamborian, West Newton, Mass.

Filed Sept. 30, 1971, Ser. No. 185,022

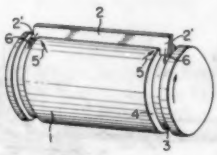
Int. Cl. B05c *1/08*, *11/00*

U.S. Cl. 118—261 **14 Claims**



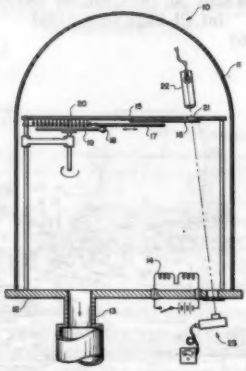
A machine for applying coating material, by means of an applicator roll and a scraper member, to a portion of the vamp of a shoe upper that is mounted on a carriage that moves past the applicator roll and the scraper member to form a box toe.

3,759,220
CLEANING DEVICE IN ELECTROPHOTOGRAPHY
Takashi Saito, and Toshihide Iida, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 2, 1971, Ser. No. 194,956
Claims priority, application Japan, Nov. 4, 1970, 45/109363
Int. Cl. G03g *13/00*
U.S. Cl. 118—261 4 Claims



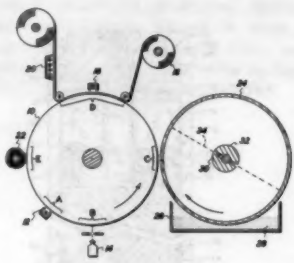
A cleaning device for an electrophotographic copying apparatus comprising a photosensitive medium having liquid collection grooves formed at the opposite end portions thereof, and a cleaning blade of resilient material having an edge adapted to bear against the surface of the photosensitive medium. The cleaning blade has projections formed at the opposite ends thereof so that when the blade is brought to its cleaning position, the inner side walls of the projections thereof may keep liquid-tight contact with the inner side walls of the liquid collection grooves. Thus, relative sliding movement between the blade and the photosensitive medium removes any amount of developing liquid remaining of the surface of the photosensitive medium after an image transfer has been completed.

3,759,221
VAPOR COATING USING A CAM CONTROLLED SHUTTER
Alan P. Bradford, Alexandria, and Lee R. Reed, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 14, 1972, Ser. No. 262,902
Int. Cl. C23c *13/08*
U.S. Cl. 118—504 3 Claims



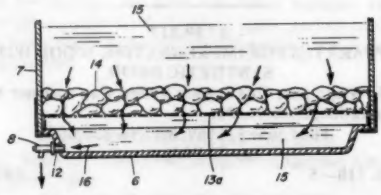
A device for controlling the coating of a filter substrate for producing a linearly variable material deposit thereon. A heart-shaped cam arrangement derived from an Archimedean spiral provides substantially constant linear reciprocal motion to a shutter which moves over the filter base; thereby exposing the filter base to the deposition of coating material.

3,759,222
MICROFIELD DONOR WITH CONTINUOUSLY REVERSING MICROFIELDS
John Maksymiak, Penfield, and Richard B. Lewis, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 4, 1971, Ser. No. 121,090
Int. Cl. G03g *13/08, 15/08*
U.S. Cl. 118—637 4 Claims



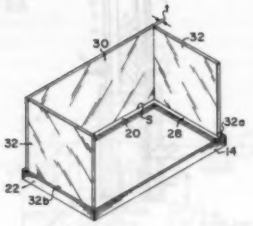
Electrostatic latent image development method is carried out by an apparatus employing a microfield donor member wherein the microfields are continuously reversed to nullify the effect of charge buildup at dielectric interfaces and within the bulk of the dielectrics.

3,759,223
AQUARIUMS
Robert A. D'Andrea, 2027 Ramblewood Rd., Baltimore, Md.
Filed May 11, 1971, Ser. No. 142,247
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 5 Claims



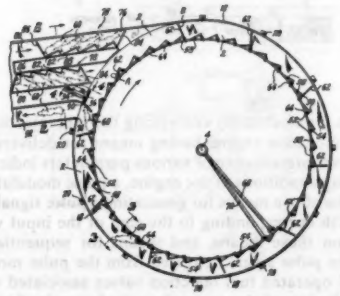
A fish aquarium is provided which is of unique construction and arrangement so that the water used in the bottom of the aquarium, including any sediment therein, can be readily drained from the aquarium and replaced with fresh water. The aquarium consists of an enclosure having four glass walls and a top, if necessary, which can be opened or closed. The bottom of the aquarium is recessed to form a septic sump for collection of sediments, and the like. A filter is positioned above the recessed bottom of the aquarium and stones are positioned on top of the filter. The sediments in the water settle to the bottom of the base, that is, in the recessed bottom after passing through the stones and filter. The sediments and old water are periodically withdrawn from the fish aquarium through a drain spigot system connected to the septic sump through the bottom of the sides below the gravel level. The construction of the invention can apply equally well to swimming pools and the like.

3,759,224
AQUARIUM
Frank Kenneth Hall, Saginaw, Mich., assignor to O'Dell Manufacturing Inc., Saginaw, Mich.
Filed Dec. 17, 1971, Ser. No. 209,101
Int. Cl. A01k 64/00
U.S. Cl. 119—5 11 Claims



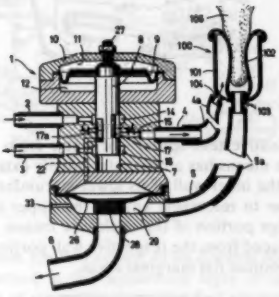
An aquarium having vertically spaced apart, enveloping, upper and lower integral frames holding a plurality of transparent side walls in sealed engagement, the lower frame member during assembly of the aquarium functioning to initially locate and support the side walls and a transparent bottom wall, and the upper frame functioning to assist the lower frame to hold the side walls while adhesive applied to join them in sealed relation is curing.

3,759,225
BATCH OPERATED MILKING APPARATUS
Francis A. Galbraith, 3472 N. Haverhill Rd., West Palm Beach, Fla.
Filed Aug. 29, 1972, Ser. No. 284,495
Int. Cl. A01j 5/00
U.S. Cl. 119—14.04 10 Claims



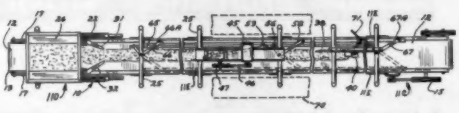
A rotary platform is divided into sectors, each sector containing a plurality of milking stalls. Preparation enclosures each hold a plurality of cows equal in number to the number of stalls in each sector so that the cows are prepared for milking, placed on the rotating platform, milked and discharged from the platform in batches rather than in single sequence. Batches of cows are admitted to the platform alternately from the preparation enclosures.

3,759,226
PROCESS FOR MILKING ANIMALS AND APPARATUS FOR USE THEREWITH
August Rudle, Stuttgart-Bad Cannstatt, and Kurt Striebel, Endingen, Wurtt, both of Germany, assignors to Bizerba-Werke Wilhelm Kraut KG, Wilhelm Kraut-Strasse, Germany
Filed Nov. 16, 1971, Ser. No. 199,146
Claims priority, application Germany, Nov. 20, 1970, P 20 57 100.0
Int. Cl. A01j 05/16
U.S. Cl. 119—14.36 13 Claims



A process for milking animals by machine consists in relieving the normal vacuum maintained in the milk line of the teat cup only during the time when the pressure in the massaging line has already been initiated and restoring the vacuum in the milk line before a vacuum is restored in the massaging line. This is accomplished by displacing the separate valving recesses of the sliding valve of a pulsator to regulate the timing of the connections between the teat cup and the pressure and vacuum sources.

3,759,227
BELT TYPE CATTLE FEEDER
Walter W. Wolfe, Mound; Jack D. Messner, Wayzata, and Eivind M. Rambo, Maple Plain, all of Minn., assignors to Van Dusen & Co., Inc., Wayzata, Minn.
Filed Dec. 20, 1971, Ser. No. 209,645
Int. Cl. A01k 5/02
U.S. Cl. 119—52 B 12 Claims

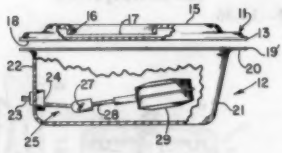


A belt type cattle feeder having a storage hopper at one end, a movable endless belt for moving material from said hopper, and a transversely movable sweep member that passes laterally across the belt when a windrow of cattle feed has reached a preselected position in relation to the hopper, and to thereby push the material from the belt into a feed bunk or a feeding location.

3,759,228
PET WATERING APPARATUS
Rodway W. Keen, 1609 Tanglewood, Odessa, Tex.
Filed Dec. 20, 1971, Ser. No. 209,974
Int. Cl. A01k 07/02
U.S. Cl. 119—79 4 Claims

Watering apparatus for pets comprised of an enclosure means and a closure means, and which can be connected to a

suitable source of water and placed at a convenient location in or about the home so as to provide a readily available supply of water for the pet. A float actuated valve assembly is disposed within the enclosure for maintaining a suitable liquid level therein. The pet gains access to the interior of the enclosure by means of a rolled port which is formed within a lid of the container. The location of the port relative to the float



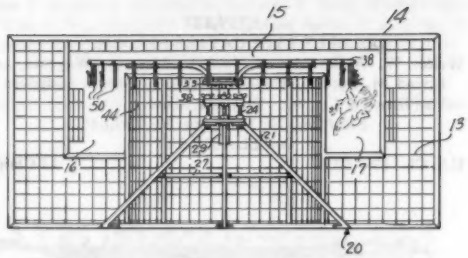
precludes inadvertent spillage of water from the container. The closure means has a circumferentially extending grooved section on the inner wall of its lower circumferential terminal edge portion to releasable engage the upper circumferential terminal edge portion of the enclosure means. The edge portions are spaced from the respective wall portions of the members by horizontal flat marginal areas.

3,759,229

DEBEAKING, VACCINATING AND CULLING WHEEL AND PANEL FOR POULTRY

Floyd G. Farrington, Rt. 2, Box 142, San Angelo, Tex.

Filed May 19, 1972, Ser. No. 255,102
Int. Cl. A01k *37/00*
U.S. Cl. 119—97 R **8 Claims**



A device for debeaking, vaccinating, grading or otherwise processing live poultry consisting of a fenced enclosure with a horizontal rotary wheel having hooks on which the poultry can be secured. One panel of the enclosure has an inverted U-shaped slot through which the wheel can be passed and the wheel has an axial journal support located so that a portion of the wheel extends outwardly through the slot and so that poultry hooked on the wheel in the enclosure can be turned to a position outside the enclosure for treatment.

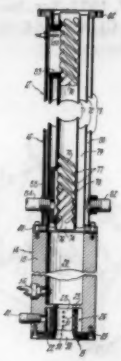
3,759,230

GAS FIRED FLUID HEATING APPARATUS

Ralph D. Cooksley, Waterford, Conn., assignor to Tagh, Inc., Westbrook, Conn.

Filed July 19, 1971, Ser. No. 163,812
Int. Cl. F22b *13/02*
U.S. Cl. 122—156 **7 Claims**

A home hot water supply and heating system having a tankless gas fired water heater with an upstanding fire box, a mixing nozzle for directing a gas and air mixture upwardly into the fire box, and an elongated and upstanding combined exhaust stack and heat exchanger above the fire box having a plurality of elongated generally coaxial tubes providing alternate water and exhaust passageways.

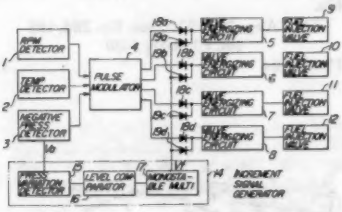


3,759,231

ELECTRICAL FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kunio Endo, Anjo, Japan, assignor to Toyoto Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, and Nippondenso Co., Ltd., Aichi-ken, both of Japan

Filed Apr. 30, 1971, Ser. No. 138,918
Claims priority, application Japan, May 7, 1970, 45/39106; June 6, 1970, 45/49050
Int. Cl. F02b *3/00*; **F02m** *39/00*
U.S. Cl. 123—32 EA **8 Claims**



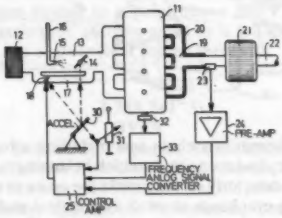
A system for electrically controlling the fuel injection in an internal combustion engine having means for delivering output voltages representative of various parameters indicative of the operating conditions of the engine, a pulse modulator connected to the above means for generating a pulse signal having a pulse width corresponding to the sum of the input voltages applied from these means, and means for sequentially distributing the pulse signal delivered from the pulse modulator to solenoid operated fuel injection valves associated with individual cylinders of the engine in a predetermined order for causing the fuel injection valves to inject fuel in an amount corresponding to the pulse width of the pulse signal. The system is provided with means for delivering a voltage representative of a variation relative in time to the negative pressure in the air intake manifold during the acceleration of the engine. The width of the pulse signal is modified by this voltage and the amount of fuel injected into each individual cylinder during the acceleration of the engine is controlled by this modified pulse signal so as to improve the acceleration characteristics of the engine.

3,759,232

METHOD AND APPARATUS TO REMOVE POLLUTING COMPONENTS FROM THE EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Josef Wahl, Stuttgart, and Peter Jurgen Schmidt, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

Filed June 23, 1972, Ser. No. 265,547
Claims priority, application Germany, Jan. 29, 1972, P 22 04 192.5
Int. Cl. F02b *3/00*; F02m *37/00*
U.S. Cl. 123—32 EA 45 Claims



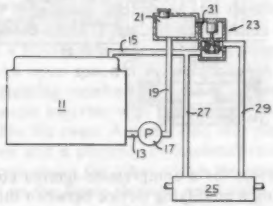
Air and fuel are applied to the inlet manifold of an internal combustion engine over a first path, the amount of air being controlled in accordance with a command input, for example to control operation of the engine. The oxygen content in the exhaust gases is measured and additional air is applied to the inlet manifold of the engine over a second path, the amount of additional air being supplied over the second path being controlled in accordance with (*a*) the amount of air admitted through the first path and, additionally, (*b*) in accordance with the measured oxygen content of the exhaust gases.

3,759,233

ENGINE COOLING SYSTEM

Edward J. Schlaffer, East Peoria, and Stevens E. Wilder, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 23, 1969, Ser. No. 827,304
Int. Cl. F01p *7/16*
U.S. Cl. 123—41.1 2 Claims



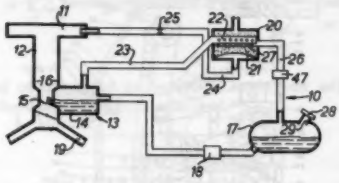
A thermostat assembly having a hot coolant chamber, cold coolant chamber, and a mixing chamber. Heated coolant from the engine enters the hot coolant chamber, causing the thermostatic sensing unit to move a portion of the thermostat assembly so as to allow cold coolant to enter the cold coolant chamber. The heated coolant and the cold coolant both enter the mixing chamber and then pass to an expansion tank, through which they pass to the coolant pump in mixed form.

3,759,234

FUEL SYSTEM

Keither Stewart Buckton, Wantage, and Ian Rowland Fraser, Oxford, both of England, assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 733,395, May 31, 1968, abandoned.
This application Nov. 24, 1971, Ser. No. 201,849
Claims priority, application Great Britain, June 21, 1967, 28,563/67; July 9, 1967, 40,970/67
Int. Cl. F02m *37/02*
U.S. Cl. 123—136 7 Claims



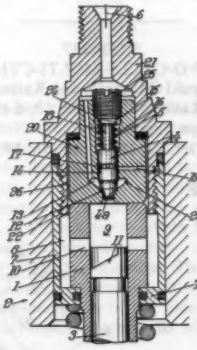
Fuel vapors from the fuel system of an internal combustion engine are absorbed in the uppermost layer of a body of material capable of reversibly absorbing fuel vapors. Desorption of the material occurs during engine operation.

3,759,235

INJECTION DEVICES FOR INTERNAL COMBUSTION ENGINES

Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A., Venissieux, France

Filed Dec. 3, 1971, Ser. No. 204,442
Claims priority, application France, Dec. 4, 1970, 7043751
Int. Cl. F02m *63/00*
U.S. Cl. 123—139 DP 3 Claims



The device comprises in addition to a delivery valve, reaspirating means. The reaspirating means are constituted by the delivery valve itself which cooperates, through a cylindrical portion of greater diameter than the maximum diameter of the annular zone of contact of a collar of the valve, with a seating. The valve slides in a cylindrical guide bore in which the cylindrical part moves in a fluid-tight manner. The device has the advantage of simplified construction.

3,759,236

CENTRIFUGAL GOVERNOR FOR REGULATING THE RPM OF INTERNAL COMBUSTION ENGINES

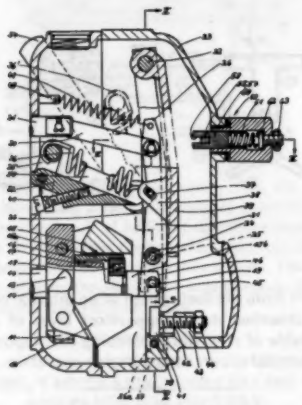
Heinrich Staudt, Markgroningen-Talhausen, and Ernst Ritter, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 4, 1971, Ser. No. 186,194

Claims priority, application Germany, Oct. 3, 1970, P 20 48 635.5

Int. Cl. F02d *1/04*

U.S. Cl. 123—140 R 3 Claims



In a centrifugal governor for regulating the rpm of an internal combustion engine, there is provided a governor member which, through a linkage system, controls the position of the fuel quantity control rod of a fuel injection pump. The rpm regulator includes a main regulator spring which opposes the displacing force of the governor member and the tension of which is variable by an arbitrarily settable operator lever for determining the engine rpm. The rpm regulator further includes an additional idling spring affecting the motion of the governor member during an arbitrarily variable portion of the travelling path of the governor member. The length of said portion is changed as a function of the position assumed by said operator lever.

3,759,237

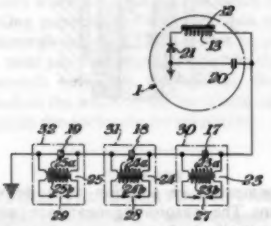
IGNITER FOR TWO-CYCLE MULTI-CYLINDER ENGINE

Goro Shino; Katsuyuki Okamoto, and Katsumi Shimura, all of Sawafuji Denki Kabushiki Kaisha, 10, 6-chome, Maino-cho, Itabashi-ku, Tokyo, Japan

Filed Oct. 22, 1971, Ser. No. 191,607

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E 5 Claims



An igniter for a multi-cylinder engine comprises a plurality of ignition circuits each consisting of a breaker, an ignition coil and a spark plug. The circuits are connected in series to one another and to one end of an ignition generator coil of an engine driven magneto. The ends of the ignition circuits and the other end of the ignition generator coil are grounded.

3,759,238

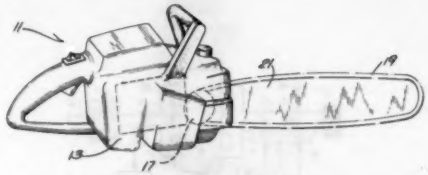
BALANCING SYSTEM

Finn T. Irgens, Wauwatosa, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 21, 1971, Ser. No. 108,443

Int. Cl. F16f *15/26*

U.S. Cl. 123—192 B 3 Claims



Disclosed herein is a chain saw including a balanced two-stroke single cylinder engine in which balancing is provided, at least in part, exteriorly of the crankcase so as to maintain the volume of the crankcase as small as practical and thereby improve crankcase pumping action. More specifically, in the disclosed construction, rotary counterweights are carried at opposite ends of an engine block exteriorly of the crankcase. In one embodiment of the invention, one of the counterweights is driven by the same pinion which drives the chain sprocket. In another embodiment of the invention, one of the rotary counterweights is also a part of a lubricating oil pump.

3,759,239

INJECTION DEVICES FOR COMPRESSION-IGNITED INTERNAL COMBUSTION ENGINES

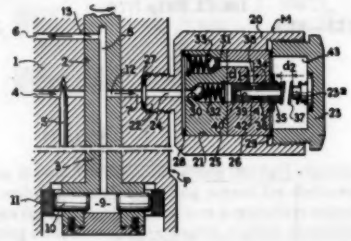
Marcel Regneault, Colombes, and Maurice LeCreurer, Taverny, both of France, assignors to Automobiles Peugeot, Paris, France

Filed May 11, 1971, Ser. No. 142,169

Claims priority, application France, June 8, 1970, 7020929

Int. Cl. F02d *1/04*, *1/06*; F02m *39/00*

U.S. Cl. 123—32 G 10 Claims



Injection device for a compression-ignited combustion engine comprising a modifying device between the injector and the fuel supply pump. The modifying device operates by taking off and restoring fuel so as to modify the injection law of the injection device. The injection device comprises an injection pump having a delivery chamber in which are movable pumping and/or distributing means which comprise first means for ensuring the non-simultaneous openings of communications between the delivery chamber and the injector and the delivery chamber and the modifying device. The modifying device comprises means for retarding the restoration of the fuel taken off to the delivery chamber so long as the first means leave the modifying device in communication with the delivery chamber.

3,759,240

IRON-CONTAINING PORCELAIN ENAMELS FOR SELF-CLEANING COOKING OVEN

Bernard J. Borowski, Cleveland, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 234,438, March 13, 1972, which is a division of Ser. No. 43,971, June 5, 1970, Pat. No. 3,671,278. This application Aug. 21, 1972, Ser. No. 282,267.
The portion of the term of the patent subsequent to June 27, 1989, has been disclaimed.
Int. Cl. A21b *1/00*
U.S. Cl. 126—19 R 6 Claims

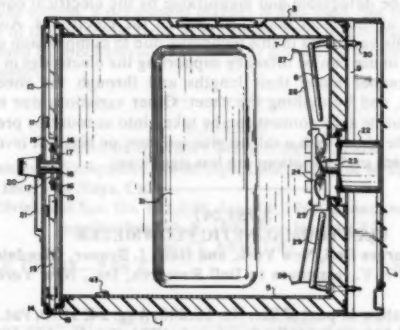
A porcelain enamel frit, containing a relatively high level of the oxide equivalent of iron, said frit adaptable to be incorporated into a vitreous porcelain enamel for application to an oven liner, said enamel characterized by the ability to oxidize oven soils when heated to a point above 350°F., but below 600°F., the method of utilizing same as a self-cleaning oven liner coating, and an oven liner coated therewith.

3,759,241

OVEN

Paul G. C. A. Berkhoudt, Jutphaas, Netherlands, assignor to Koninklijke Fabriek Inventum N.V., Bilthoven, Netherlands

Filed Mar. 6, 1972, Ser. No. 231,886
Claims priority, application Netherlands, Dec. 16, 1971, 7117236
Int. Cl. A21b *1/26*; F24c *15/32*
U.S. Cl. 126—21 A 7 Claims



The oven is adapted to uniformly and rapidly heat foodstuffs carried therein and is particularly useful in aircraft. The oven includes a housing having side walls, a top wall, and a bottom wall. An open space is defined between the top and bottom walls. Heating members for heating air within the oven are located therein together with a blower for circulating the heated air within the oven. A perforated rear plate is located within the oven and a plurality of foodstuff-receiving plates are arranged one above the other within the open space. Hot air is supplied to the space through open sides and an open front of the space and is conducted away from the space through the perforated rear wall.

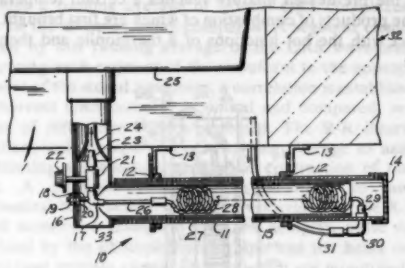
3,759,242

BAR-BE-CUE DEVICE

Maurice G. Mauger, 223 Ingall Ave., N.E., Massillon, Ohio

Filed Nov. 3, 1971, Ser. No. 195,282
Int. Cl. A47j *37/07*
U.S. Cl. 126—25 2 Claims

A retractable bar-be-cue device. This device consists primarily of a telescoping sleeve which may be extended from the trailer or the like. The device carries a flexible tube to which is attached bottled gas within the trailer and the extended end contains the grill portion having an adjustable burner in the lower tube portion thereof.

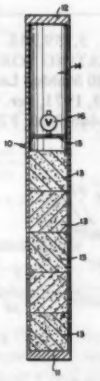


3,759,243

NUCLEAR FUEL ELEMENT

William R. Masetti, Elmsford, N.Y., assignor to United Nuclear Corporation, Elmsford, N.Y.

Filed Mar. 25, 1970, Ser. No. 22,417
Int. Cl. G21c *3/18*
U.S. Cl. 176—68 6 Claims



A nuclear reactor fuel element in tubular form and closed at both ends has at least one chamber for receiving gaseous fission products through pressure-responsive entrance means, the remainder of the fuel element tube being approximately filled with fissionable material. The pressure within the fueled portion of the element rises quickly to approximately the operating pressure of the reactor in which the fuel element is installed and remains approximately at that pressure throughout the life of the fuel element. This is accomplished by admitting gaseous fission products to the chamber whenever, during the operating life of the element, the pressure rises to the predetermined pressure to which the entrance means is responsive.

3,759,244

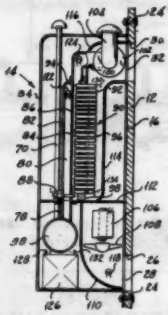
VEHICLE HEATER

Henry Konet, Hohokus, N.J., assignor to Neilford Leasing, Inc., Secaucus, N.J.

Filed May 11, 1971, Ser. No. 142,134
Int. Cl. F24h *3/10*
U.S. Cl. 126—110 R 2 Claims

A self-contained automatic heater unit for a vehicle such as a truck trailer or the like in which a temperature sensor auto-

matically ignites a pre-heater by means including a rechargeable power source to supply a mixture of hot air and fuel to a burner plate of large area the burners of which are ignited when the pre-heated mixture reaches a certain temperature and the products of combustion of which are first brought into contact with the hot junctions of a thermopile and then are



passed through a heat exchanger to which air from the space to be heated is supplied by a fan which first moves this cool air past the cold junctions of the thermopile and then through the heat exchanger to the space to be heated and in which the voltage produced by the thermopile recharges the battery which provides a power source for the system.

3,759,245

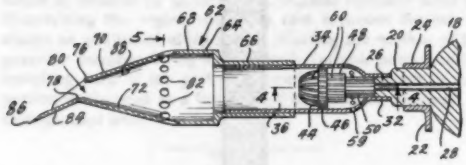
HEATING TORCH

Phillip V. Greco, Sr., 1630 Maldon Ln., Dellwood, Mo.

Filed Dec. 10, 1971, Ser. No. 206,693

Int. Cl. B44b *7/00*; **F23d** *13/00*

U.S. Cl. 126—406 **16 Claims**



A portable heating torch for applying heat generated from a flame in a uniformly distributed pattern to a work surface in order to enable the performance of manual work such as cutting, scraping or the like on such work surface. The torch comprises a handle capable of being grasped by the hand of an operator and which is provided with a fuel delivery tube or other flexible fuel delivery means for connection to a suitable source of an ignitable fuel, and preferably a gaseous fuel such as propane or the like. A metal housing which forms an internal fuel receiving chamber is attached to and carried by the handle. The fuel employed is generally a gaseous fuel under pressure and is delivered to the fuel receiving chamber from the source through this tube or other flexible means and through a duct in the handle which is in fluid communication with the fuel delivery tube and the fuel receiving chamber. The fuel is injected into the fuel receiving chamber through an orifice therein and is mixed with air introduced into the fuel receiving chamber through a plurality of air intake apertures formed in the chamber wall. A heat application head is connected to the fuel receiving chamber and is in fluid communication therewith for receiving the fuel-air mixture and enabling a flame supported by combustion of the ignitable fuel-air mixture to be uniformly applied across a preselected area of the work surface. In a preferred embodiment of the invention, a work element such as a cutting member or a scraping member is mounted on and carried by the heat application head and is located in the path of the flame so that it is simultaneously heated along with the heat applied to the work surface, and in this way permits manual work to be performed by use of the work element on the heated work surface.

3,759,246

INCONTINENCE MEASUREMENT SENSOR

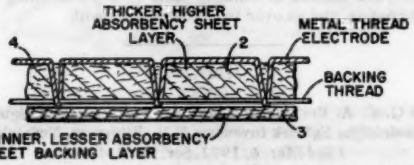
Frederick Colin Flack, and Evan Douglas James, both of Devon, England, assignors to National Research Development Corporation, London, England

Filed Apr. 23, 1971, Ser. No. 136,710

Claims priority, application Great Britain, Apr. 29, 1970, 20,514/70

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 R **6 Claims**


THICKER, HIGHER ABSORBENCY SHEET LAYER
METAL THREAD ELECTRODE
BACKING THREAD
THINNER, LESSER ABSORBENCY SHEET BACKING LAYER

Urinary incontinence can be evaluated both in respect of frequency and quantity by use of a detector device in the form of a flexible sheet of absorbent material having elongate electrodes supported in it in an interleaved, uniformly spaced array. This device is worn as a diaper and any incontinence will vary and be detectable and measurable by the electrical conductivity of the sheet material between the electrodes. Any undesirable variations in this technique due to compression of the sheet in use can be offset by supporting the electrodes in a waved manner along their lengths and through the sheet thickness, and by quilting the sheet. Other variations due to differing urine salts content can be taken into account by preloading the sheet with a salt to give a datum or bias salt level above which such variations are less significant.

3,759,247

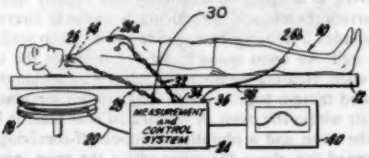
ELECTROMAGNETIC FLOWMETER

Henri Georges Doll, New York, and Hans J. Broner, Glendale, both of N.Y., assignors to Doll Research, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 66,240, Aug. 24, 1970, Pat. No. 3,659,591. This application July 1, 1971, Ser. No. 158,697

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 F **7 Claims**



A noninvasive electromagnetic flowmeter particularly adapted to measure arterial blood flow in human beings is provided. A homogeneous magnetic field is produced in the region of the artery under measurement by means of at least one electromagnetic coil or a permanent magnet suitably positioned near the human being. Blood flow induced signals are sensed by electrodes placed on the skin adjacent the artery and fed to a measurement and control circuit. Electrocardiogram signals are sensed by a second pair of electrodes placed on the body near the heart and synchronize the operation of this system.

One embodiment of the control and measurement system comprises a pair of auxiliary electrodes located where a strong and sharp cardiogram pulse can be repeatedly obtained to be used as a synchronizing signal and as a clock, at least one coil of large enough size having enough turns of wire to be adequate for the production of a strong and homogeneous magnetic field in the region of the artery under study, a source of D.C. current to feed that coil, means to reverse that D.C. current after a given number of heart cycles in accordance with a program controlled by the sychronizing signal, a pair of measuring electrodes placed on the skin adjacent the artery, an amplifier to amplify the signal appearing between said measuring elecrodes, with filtering means to eliminate the D.C. unbalance of the electrodes and the high frequency noise, means to paralyze the amplifier and to reverse its output during current reversal, and means synchronized by the synchronizing signal to average the pulsatile signal measured between the measuring electrodes during successive heart cycles so as to extract the repetitive wave shape of the blood flow pulses from the large random noise in which it is otherwise buried.

In another embodiment of the control and measurement system, the coil in which a stable current is maintained during all the measuring intervals, as described in the paragraph above, is replaced by an electrically reversible permanent magnet. This permanent magnet is surrounded by a magnetizing coil in which DC current pulses of short duration are passed only at the times when the polarity of the magnetic field, and therefore the polarity of the permanent magnet, have to be reversed. There is no current in the magnetizing coil during the intervals when measurements of blood flow cycles are made and averaged.

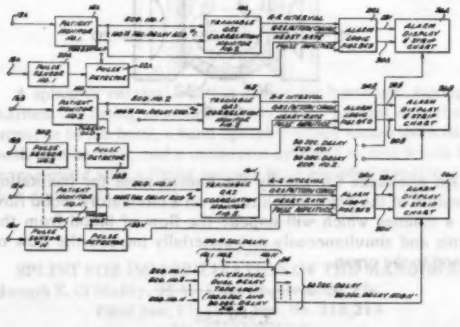
In still another embodiment of the control and measurement system, a permanent magnet is also used, but the reversal of the magnetic field, at the times when it is needed, is obtained by mechanically reversing or displacing the permanent magnet.

3,759,248

CARDIAC ARRYTHMIA DETECTOR

Donley J. Valiquette, Northridge, Calif., assignor to Spacelabs, Inc., Van Nuys, Calif.

Division of Ser. No. 791,638, Jan. 16, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,331
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 A **20 Claims**



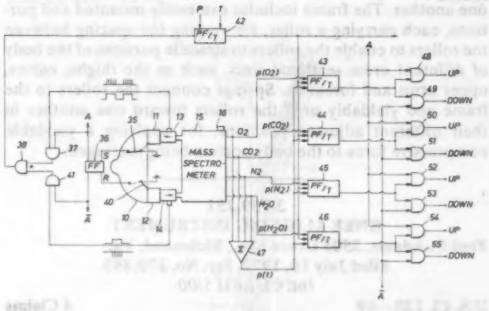
A system is described to continuously monitor a number of cardiac patients in a hospital. Electrocardiogram probes are placed upon a plurality of patients and simultaneously monitored by this system for changes in the normal electrocardiogram (ECG) waveforms. Each ECG waveform is recorded on a 30 second tape loop delay for retrieval during an alarm condition for a determination of the cause of the alarm. This tape loop also provides a 100 millisecond delay of ECG for correlation monitoring of the QRS complex of the ECG. An R wave trigger is generated and is utilized for R-R interval measurements. A correlation monitor is provided and quantizes the ECG QRS complexes and stores each segment thereof for comparison with subsequent waveforms. The stored waveform provides a running average of several QRS complexes just prior to the complex being compared. A segment element is trained by this running average of the QRS waveform. By comparing each segment of the waveform to the appropriate segment of the stored waveform, a correlation is established. If an aberrant QRS complex is sensed and compared, several points of difference will be detected. The R-R interval is simultaneously compared on a running average to assist in establishing a premature ventricular contraction of the patient. A photoplethysmograph is provided to monitor mechanical heart action. The signals provided by the R-R interval monitor, a change in the QRS complex, pulse signals provided by the photoplethysmograph and the heart rate of the patient provide certain criteria which are monitored by a logic circuit to provide a minor alarm on certain criteria and a major alarm on any combination of the waveforms.

3,759,249

RESPIRATORY ANALYSIS SYSTEM AND METHOD

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Frederick F. Liu, 17812 Community St., Northridge, Calif.

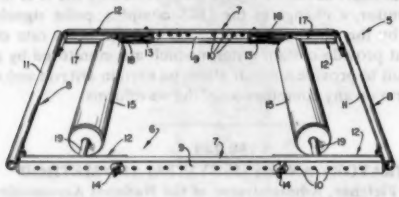
Filed Aug. 19, 1971, Ser. No. 173,190
Int. Cl. A61b 5/08
U.S. Cl. 128—2.08 **7 Claims**



A system for monitoring the respiratory process wherein the gas flow rate and the frequency of respiration and expiration cycles can be determined on a real time basis. A face mask is provided with one-way inlet and outlet valves where the gas flow is through independent flowmeters and through a mass spectrometer. The opening and closing of a valve operates an electrical switch, and the combination of the two switches produces a low frequency electrical signal of the respiratory inhalation and exhalation cycles. During the time a switch is operated, the corresponding flowmeter produces electric pulses representative of the flow rate, the electrical pulses being at a higher frequency than that of the breathing cycle and combined with the low frequency signal. The high frequency pulses are supplied to a conventional analyzer computer which also receives temperature and pressure inputs and computes mass flow rate and totalized mass flow of gas. From the mass spectrometer, components of the gas are separately computed as to flow rate as well. The electrical switches cause operation of up-down inputs of a reversible counter. To measure a real time, a 1-minute clock pulse is used to operate the counter. The occurrence of a pulse alerts the counter, and the next succeeding reverse from down to up in the breathing cycle causes an electrical sequence to occur in which the counter is momentarily inhibited while the count therein is transferred to a printer. The electrical sequence is complete before the next up-to-down reverse in the breathing cycle occurs, so that there is no loss in the counting of cycles. Thus, the number of cycles closest to one-minute time are measured.

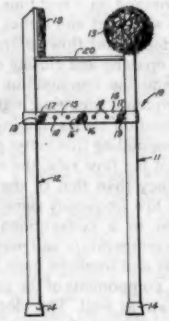
The respective up and down cycles can be individually monitored and combined for various respiratory measurements.

3,759,250
MASSAGING DEVICE
Dominic R. Salata, 2593 Coral Way West, Daytona Beach, Fla.
Filed Oct. 19, 1971, Ser. No. 190,617
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **7 Claims**



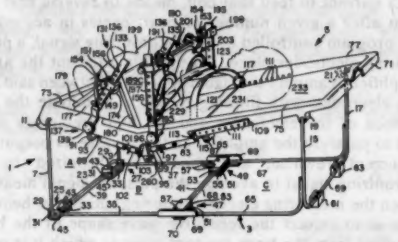
A device for massaging various parts of the human body, especially the arms and legs, to reduce and firm said parts, including a frame in which a pair of rollers are rotatively mounted in spaced apart, substantially in parallel relation to one another. The frame includes extensibly mounted end portions, each carrying a roller, for varying the spacing between the rollers to enable the rollers to straddle portions of the body of different cross sectional sizes, such as the thighs, calves, upper arms and forearms. Springs connect the rollers to the frame and yieldably urge the rollers toward one another in their different adjusted positions, for applying a yieldable compressive force to the body portion being massaged.

3,759,251
KNEE ALIGNING INSTRUMENT
Fred C. Adams, 3505 Grove Ave., Richmond, Va.
Filed July 10, 1972, Ser. No. 270,493
Int. Cl. A61f *5/00*
U.S. Cl. 128—69 **4 Claims**



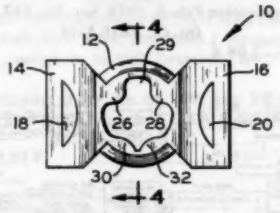
A device for aligning one's knee when it is locked in a cocked position. This device consists primarily of a pair of spaced apart rods with handle portions, the rods being secured together by pivotal cross bars which are adjustable by means of bolt and nut fasteners, the ends of the rods having pad portions for comfort when the device is placed in use.

3,759,252
APPARATUS FOR HIP DISLOCATION TREATMENT
Seymour S. Berman, 2001 Fallen Leaf Ln., Los Altos, Calif.
Filed Oct. 10, 1972, Ser. No. 296,332
Int. Cl. A61f *5/00*
U.S. Cl. 128—70 **26 Claims**



Apparatus for hip dislocation treatment adapted for positioning and securing the bones of the leg and hip of an individual patient in a selected relative position for immobilizing said bones during a healing period. The apparatus comprises a cradle shell for cradling the patient's body; a first support bar for engaging the individual about the underneath side of the individual's knees so as to support the patient's legs at a fixed elevation, said first support bar being positionally adjustable to select the degree of flexion of the individual's legs relative to his trunk; and an adjustable support yoke assembly for engaging about the top side of the patient's leg to anchor the leg in a fixed degree of abduction and to anchor the leg in said degree of flexion and abduction.

3,759,253
HUMAN MALE APPLIANCE
Charles A. Cray, 4801 Eastwick Dr., Toledo, Ohio
Filed Apr. 19, 1972, Ser. No. 245,539
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **6 Claims**

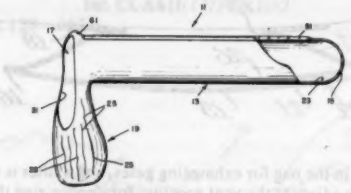


An appliance for use by the human male for facilitating erection of the penis which reacts on a circulatory blood flow in a manner which will impede the flow of blood from the penis and simultaneously not materially impede the flow of blood to the organ.

3,759,254
HYGIENIC APPLIANCE
Claud W. Clark, P. O. Box 342, Hermosa Beach, Calif.
Filed June 14, 1972, Ser. No. 262,570
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **6 Claims**

A resilient and flexible prophylactic and contraceptive generative male organ appliance having a thin-walled elongated tubular portion with a closed end, and having an integrally formed thin-walled scrotum sack portion immediately adjacent an open end of the tubular portion, the open end of the tubular portion being a part of an elongated opening ex-

tending a predetermined distance to the sack portion. The appliance may also include an elongated cartilaginous rib portion along the length of the tubular portion as a prosthesic aid to copulation.



3,759,255

SPINAL TRACTION APPARATUS

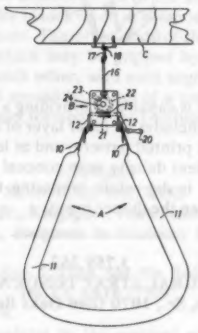
Eric William Taylor, 20 Ridgeway Ave., Rhyl Flintshire, North Wales

Filed Dec. 10, 1971, Ser. No. 206,847

Claims priority, application Great Britain, Dec. 22, 1970, 60,759/70

Int. Cl. A61h *1/02*

U.S. Cl. 128—75 **2 Claims**



A spinal or cervical traction device for home use, having a harness for fitting around the body below at least in part the arms, or to the head, a hand operable winch means associated with said harness, and a connector attached to said winch for engagement with a fitting secured in an elevated position, e.g. to a door lintel.

3,759,256

SPLINT FOR IMMOBILIZATION OF THE MANDIBLE

Joseph E. O'Malley, 95 W. Gore St., Orlando, Fla.

Filed Jan. 17, 1972, Ser. No. 218,213

Int. Cl. A61f *5/04*

U.S. Cl. 128—89 A **3 Claims**

A simplified splint for precise immobilization of the mandible or lower jawbone in mandibular injuries having a main or supporting harness of a single piece of material with a chin support and an occiput engaging support connected by curved portions passing over the ears on either side of the patient's head. A top-of-the-head strap connects the curved portions of the supporting harness together with a quick connect Velcro connection and a pair of posterior straps connect the occiput engaging portion and the chin support portion of the supporting harness together below the ears, each strap having a quick connect Velcro connection so that a splint is provided which may be rapidly placed on a patient without interference with the patient's ears and forehead.

3,759,257

CONNECTOR FOR FRACTURED TUBULAR BONES

Artur Fischer, Altheimei Strasse 219, Tumlingen, Germany, and Jean-Nicolas Muller, Strassburg, France, assignors to said Fischer, by said Muller

Filed Mar. 13, 1972, Ser. No. 234,097

Claims priority, application Germany, Mar. 13, 1971, P 21 12 138.0

Int. Cl. A61f *5/04*

U.S. Cl. 128—92 BC **9 Claims**

An elongated rod-shaped element can be inserted into the curved longitudinal cavity of a fractured tubular bone. At its front end it is provided with an expander portion by means of which it can expand an expansion element provided at the front end of a tubular sleeve which surrounds the rod, when the latter is moved axially and rearwardly with respect to the front end of the tubular sleeve. The expander portion may be releasably connected with the rod for which purpose inter-engaging coupling portions may be provided on the rod and on the expander portion.

3,759,258

COMBINATION TAMPON APPLICATION AND PLUNGER

Michael Loyer, South Somerville, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed June 6, 1972, Ser. No. 260,086

Int. Cl. A61f *15/00*

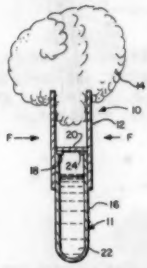
U.S. Cl. 128—263 **7 Claims**

A tampon applicator of reduced length is provided which is not substantially larger then the tampon itself, is economical to produce and simple to use. The applicator comprises a holder having a bottom and upstanding side members forming

a frame for enclosing a tampon. Pivotably mounted at the top of and between said side members is a pivot element provided with means for securing the bottom of a tampon thereto;

whereby the tampon may be rotated so as to be enclosed within the frame of the holder for packaging and storage. In use, the tampon may be rotated to a position above the holder; the holder then forming a convenient applicator.

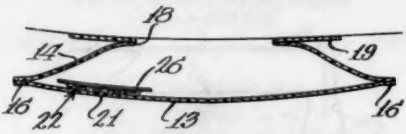
3,759,259
MEDICATOR WITH FRANGIBLE SEAL
Andrew Truhan, R.D. 3, Box 392 T, Somerset, N.J.
Continuation-in-part of Ser. No. 877,639, Nov. 18, 1969, abandoned. This application Mar. 8, 1971, Ser. No. 122,011. The portion of the term of the patent subsequent to July 7, 1987, has been disclaimed.
Int. Cl. A61m *35/00*
U.S. Cl. 128—269 **2 Claims**



A medicator having an applicator with a medicament container connected thereto. A seal, frangible upon the application of lateral pressure thereto normally blocks communication between the applicator and the container.

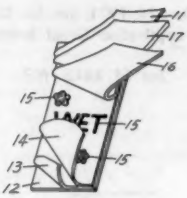
3,759,260
POST-SURGICAL DRAINAGE COLLECTION POUCH
John L. Nolan, Glenview, and Donald E. Etes, Crystal Lake, both of Ill., assignors to Hollister Incorporated, Chicago, Ill.
Filed Sept. 20, 1971, Ser. No. 181,961
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **15 Claims**

A collection pouch for receiving drainage from an abdominal opening following surgery comprising a flexible fluid-tight bag having a lateral opening adapted to register with the abdominal opening, means for sealing the bag to the abdomen around the registered openings in the abdomen and the bag, and means for venting the bag under controlled circumstances to exhaust gases which may have unpleasant odors. In one form of the invention, a vent aperture is provided in the bag for exhausting gases, together with releasable means adhesively secured to the bag to close the vent aperture in a manner which permits removal of the releasable means to vent the bag in privacy and replacement of the releasable means to again close the vent aperture. In another form, a vent aperture is



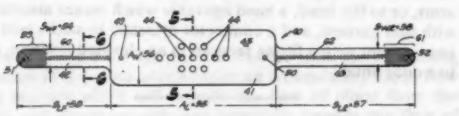
provided in the bag for exhausting gases, and a filter is secured to the bag adjacent the vent aperture for deodorizing the gases exhausted through the aperture.

3,759,261
DIAPERS, DISPOSABLE DIAPERS AND DISPOSABLE DIAPERS WITH WATER-PROOF LAYER
Rong-Shuang Wang, 24-A Gate House Apts., Beverly, N.J.
Filed Mar. 9, 1972, Ser. No. 233,160
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **6 Claims**



A diaper which is capable of providing a readily visible indication when wet includes an inner layer of absorbent material, a layer carrying a printed pattern, and at least one outer layer which is of sufficient density as to conceal the printed pattern when the diaper is dry while rendering the printed pattern readily visible when the diaper is wet.

3,759,262
INTEGRAL STRAP TISSUE NAPKIN
John Leslie Jones, Sr., 1070 Glen Oaks Boulevard, Pasadena, Calif.
Filed Apr. 7, 1971, Ser. No. 131,883
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R **17 Claims**

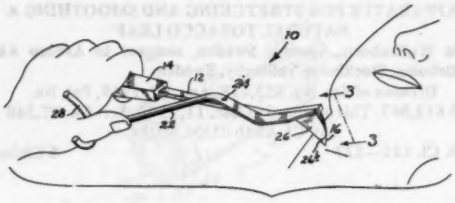


This invention teaches a new menstrual napkin modification embodying multiple ply tissue paper sheets disposed coplanarly adjacent and forming a menstrual fluid elongated absorptive section area. One of a pair of integral napkin mounting and securing, multiple ply, tissue paper sheet narrow straps are disposed at each opposed end of the absorptive section area, symmetrically disposed about the napkin elongated length axis. The straps are formed of integral extensions of the coplanarly disposed tissue paper sheets. A reversible menstrual napkin has a pair of equal length integral napkin mounting and securing narrow straps. The reversible menstrual napkin is optimally formed by multiple die cutting the interlocking reversible napkin modifications from a wide web of multiple ply tissue paper sheets.

3,759,263
CUTTING AND DIALATING SURGICAL DEVICE

Duane F. Taylor, 680 Winter St., Salem, Oreg.

Filed Nov. 10, 1971, Ser. No. 203,095
Int. Cl. A61b 17/34, 13/32
U.S. Cl. 128—305 8 Claims



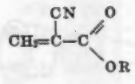
A surgical device, such as may be used in performing emergency tracheotomies, including an elongate handle and an arm pivotally connected thereto intermediate its ends. The arm and handle have a pair of adjacent ends which move toward and away from each other on relative swinging of the arm and handle about their pivot connection. A first blade is secured to one of the adjacent ends and a second blade is secured to the other. The first blade has a sharpened end spaced outwardly from the handle and sharpened, opposed, diverging edges extending from the sharpened end toward the handle. The second blade is adapted to rest in face-to-face contact with the first blade when the adjacent ends of the arm and handle are moved together. The blades when in this position define an integral cutting element. The other ends of the arm and handle include portions which may be gripped by an operator and squeezed toward each other, with such urging the two blades to move apart and spreadthe edges of a cut made by the integral cutting element formed by the two blades.

3,759,264
SURGICAL METHOD

Harry W. Coover, Jr., Kingsport, Tenn., and David W. Fassett, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 7, 1966, Ser. No. 541,026
Int. Cl. A61b 17/04
U.S. Cl. 128—334 R 12 Claims

This invention relates to the surgical use of monomeric esters of α-cyanoacrylic acid having the formula



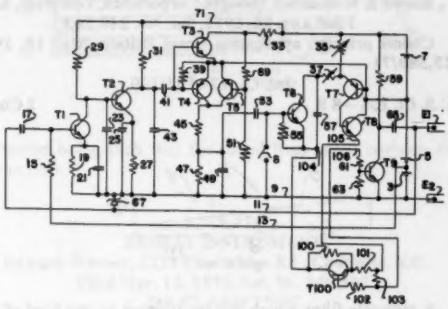
wherein *R* is a saturated hydrocarbon radical of two to 10 carbon atoms for the purpose of bonding together living tissue.

3,759,265
PULSE-WIDTH CONTROLLED HEARTBEAT STIMULATING APPARATUS MONITORING SYSTEM

Sherwood S. Thaler, Lexington, and Barough V. Berkovits, Newton Highlands, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 163,619, July 19, 1971, which is a continuation-in-part of Ser. No. 16,478, March 4, 1970, Pat. No. 3,674,015, which is a division of Ser. No. 727,129, April 11, 1968, Pat. No. 3,528,428. This application May 8, 1972, Ser. No. 251,412
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 2 Claims

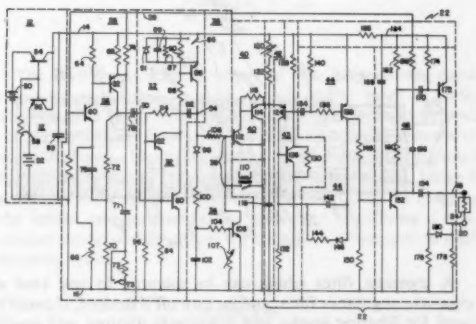
Pulse-width controlled heartbeat stimulating apparatus. The apparatus includes an electrical power supply and a pulser for generating stimulation pulses on terminals connected to a patient's heart. An integral control is provided for automatically varying the width of the stimulation pulses as a function of the power supply (energy source) value to maintain the energy output above a predetermined level. The present invention can be used with many types of heart stimulating devices including extra-corporeal pacers, but is particularly useful when utilized with non-accessible or implanted pacers. In an illustrative embodiment, a circuit is provided for indicating the approximate amount of remaining power supply life and for controlling energy supplied to the heart with each stimulation pulse to greater than a minimum required value regardless of energy source variation.



3,759,266
CARDIAC-AUTOPACER WITH VARIABLE REFRACTORY, NON-LINEAR FEEDBACK, LATCHING RESET AND VOLTAGE INCREASING CIRCUITS

Jin W. Lee, North Miami, Fla., assignor to Medcor, Inc., Hollywood, Fla.

Filed Oct. 7, 1970, Ser. No. 78,659
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 24 Claims



A self-contained, implantable cardiac-autopacer providing ultra long battery life and high reliability through parallel battery redundancy and circuit techniques. The cardiac-autopacer operates in a demand mode with a variable simulated refractory period which is long during artificial stimulation and short during natural ventricular depolarization. In this way the demand functioning of the cardiac-autopacer is maintained from normal to tachycardia rates. In the presence of noise or interfering signals with frequencies beyond the tachycardia rate the autopacer will continuously generate artificial heart stimulating pulses of a predetermined interval. Both artificial pulse duration and interval are maintained independent of load variation, but pulse interval varies with battery voltage making it possible to externally monitor battery

condition by triggering the autopacer into a continuous pulse mode.

3,759,267

SMOKING ARTICLES

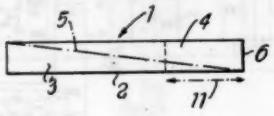
Raymond E. Thornton, Dibden Purlieu, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Apr. 28, 1972, Ser. No. 248,743

Claims priority, application Great Britain, May 18, 1971, 15,580/71

Int. Cl. A24d *01/100*

U.S. Cl. 131—8 R **2 Claims**



A cigarette filter which can be adapted to any kind of cigarette, regular or filter, and be torn off if desired. It could be constitution, comprising shredded natural tobacco, reconstituted tobacco, tobacco substitute and/or filler. The said portions adjoin each other at a surface inclined in relation to the axis of the article. The two portions may be wedge shaped and adjoin each other at a plane inclined in relation to the longitudinal axis of the article. Alternatively, one portion is a core of conical or frusto-conical shape and is surrounded by the other portion.

3,759,268

SELECTIVE AIR DOSING MEANS FOR CIGARETTES

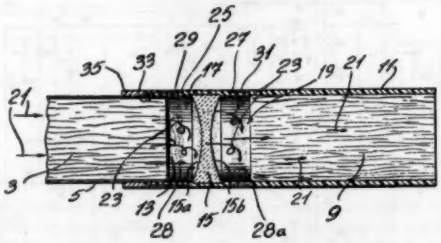
Jacques Plourde, 1525 Ave. des Flandres, Ste-Foy, Quebec 10, Canada

Filed Aug. 5, 1970, Ser. No. 61,086

Claims priority, application Canada, May 25, 1970, 083,703

Int. Cl. A24d *01/04*

U.S. Cl. 131—9 **7 Claims**



A cigarette filter which can be adapted to any kind of cigarette, regular or filter, and be torn off if desired. It could be used for filtering smoke and selectively diluting said smoke with air. When used in combination with an ordinary cigarette, the resulting cigarette comprises a cylindrical tobacco roll, surrounded with its usual paper wrapper, and a filter. The filter is spacedly mounted at one end of the tobacco roll to define a hollow cylindrical inner space therebetween. Inside the hollow cylindrical inner space, there is a porous disc, in which the opposite faces are preferably both concave. This disc is positioned substantially half-way between the end of the cylindrical tobacco roll and the filter to divide the hollow cylindrical space into a first and a second smoke cooling chamber. Perforations are provided in the walls of both smoke cooling chambers and the perforations can at will be covered or uncovered to cause one or both chambers to become permeable to air. In this manner, when only filtering of the smoke is desired the filter cigarette is used as such. When smoke diluted with air is desired, the first cooling chamber is made permeable to air. Finally, if air exclusively is intended to be inhaled, both cooling chambers are rendered permeable to air thus precluding any substantial inhaling of smoke. The disclosure also relates to a filter cigarette adapted with the above supplementary filtering device.

3,759,269

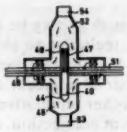
APPARATUS FOR STRETCHING AND SMOOTHING A NATURAL TOBACCO LEAF

Nils Wallenborn, Spanga, Sweden, assignor to Arenco Aktiebolag, Stockholm-Vallingby, Sweden

Division of Ser. No. 853,418, Aug. 27, 1969, Pat. No. 3,612,067. This application Dec. 11, 1970, Ser. No. 97,348

Int. Cl. A24b *05/04, 05/14*

U.S. Cl. 131—123 **6 Claims**



An apparatus for stretching and smoothing tobacco leaves comprising an intermittently advanced, air-permeable, stretchable conveyor belt for carrying leaves from a receiving station to a smoothing station to a stretching station. A moist leaf placed and aligned on the belt at the receiving station, and held thereon by suction through the belt, is advanced to the smoothing station where it is clamped by its central vein and subjected to diverging air currents that flutter the edges of the leaf outwardly. Suction is then reapplied to hold the leaf and it is advanced to the stretching station where the belt is transversely stretched to thereby stretch the leaf as well.

3,759,270

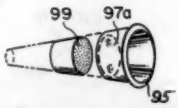
MULTI-PIECE FILTER FOR SMOKING DEVICE

Marjorie E. Wright, 929 Greentree Dr., Winter Park, Fla.

Continuation-in-part of Ser. No. 593,876, Nov. 14, 1966, abandoned. This application Jan. 21, 1970, Ser. No. 4,717

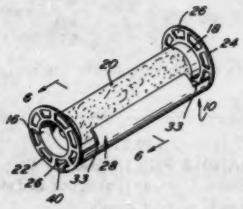
Int. Cl. A24d *01/04*; **A24f** *07/04, 13/06*

U.S. Cl. 131—261 B **1 Claim**



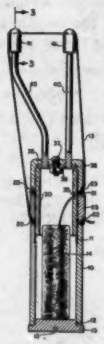
A multi-piece filter assembly for use in a smoking device such as a cigarette, cigarette holder or the like in order to filter out tars and other harmful products from the smoke emanating from burning tobacco, comprising a primary filter and a secondary filter, with the primary filter including a member containing two or more minute holes, with the smoke passing through these minute holes being caused to increase in velocity as a result of the small size of the holes, and therafter decrease in velocity, with this decrease in velocity causing a depositing out of the tars and related undesirable substances. Various arrangements are provided for disposing the primary filter disk in the desired relationship to the tobacco of the smoking device, and may include the use of a generally cylindrical supporting means that tends to heat up during use as the smoke passes through, with such heating causing an enhancement of the filtering action.

3,759,271
HAIR CURLER
Richard Caruso, 7801 Montgomery Ave., Elkins Park, Pa.
Filed June 12, 1972, Ser. No. 261,848
Int. Cl. A45d *2/12*
U.S. Cl. 132—33 G 9 Claims



A hair curler for subjecting hair to hot steam to effect a curling action includes a hollow perforated core surrounded by a compressible porous foam pad mounted within a generally semi-cylindrical shield to protect the scalp from being subjected to the hot steam.

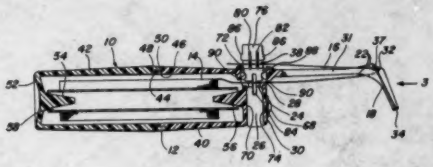
3,759,272
DENTAL FLOSS HOLDER AND DISPENSER
Angelo D. Di Vincenti, 1921 Ormandy Dr., Baton Rouge, La.
Filed Sept. 7, 1971, Ser. No. 178,053
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R 9 Claims



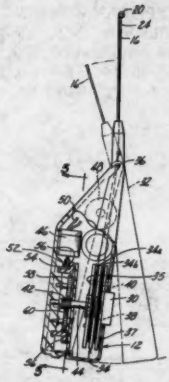
A dispenser and holder for dental floss and other teeth cleaning materials which includes two prongs over which the dental floss is strung, the prongs being attached to a case containing a roll of dental floss, and means for holding the dental floss tightly over the prongs.

3,759,273
DENTAL FLOSS HOLDER
Heimo A. Knaus, Rt. 3, Box 552-B, Escondido, Calif.
Filed Mar. 31, 1972, Ser. No. 239,994
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R 7 Claims

A dental floss holder comprising a unit including a container for a spool of dental floss and a fork having tines across which the floss is stretched by manipulating a lock, the construction being such that the soiled floss never contacts the clean floss.



3,759,274
DENTAL INSTRUMENT
C. Edward Warner, 2221 Thornridge Rd., Charlotte, N.C.
Filed Mar. 12, 1973, Ser. No. 340,597
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R 15 Claims

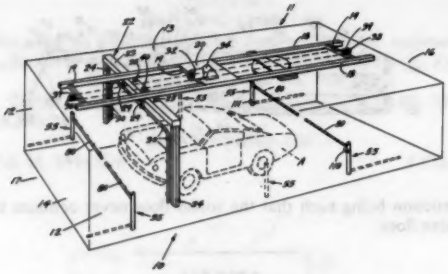


The device uses a strand of dental floss for removing particles entrapped between teeth or around the bases of teeth. The strand of dental floss is mounted on an extended fork used for supporting the strand and to allow oscillating movement when used in a cleaning operation. A drive means is included for imparting the oscillating movement to the strand. There is also included a device cooperating with the spool for carrying the strand and supporting the strand for registering a new, unused strand of dental floss for operation subsequent to each cleaning cycle.

3,759,275
CAR WASH INSTALLATION
John C. Walters, R.D. 1, Ashville, N.Y.
Filed Feb. 3, 1972, Ser. No. 223,126
Int. Cl. B60s *3/04*
U.S. Cl. 134—45 12 Claims

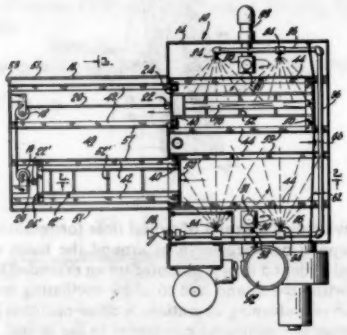
A car wash installation comprising a housing having a suspended guide track for mounting an inverted U-shaped frame carrying a spray conduit reciprocable relative to a stationary vehicle. Four corner posts extend upwardly above the deck of the housing and are provided with horizontally extending spray wands normally extending parallel to the longitudinal axis of the vehicle in an inoperative position and pivotable approximately 90° to a position of use in front of and behind the vehicle for vertically traversing the front and rear ends of the vehicle. Two of the laterally spaced posts are car-

ried by a carriage mounted beneath the deck of the housing. The carriage is movable lengthwise of the vehicle for position-



ing such posts in close proximity to one end of the vehicle for accommodating vehicles of various lengths.

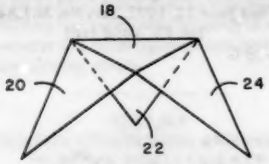
3,759,276
DRAWER TYPE PAN WASHING MACHINE
Robert K. Nolte, Chatham, N.J., assignor to Metalwash Machinery Corporation, Elizabeth, N.J.
Filed Dec. 30, 1971, Ser. No. 214,102
Int. Cl. B08b 3/02
U.S. Cl. 134—57 DL **16 Claims**



An automatic washing machine for food handling pans having drawers that are interconnected whereby when one drawer is extended out of the housing the other is retracted into the housing. The housing is sealed by the fully extended drawer and by the fully retracted drawer. The drawers are mounted in the housing in a side-by-side relationship facing an assembly of washing and rinsing nozzles. The machine also has a hinged cover permitting insertion of a rack therein for washing other objects.

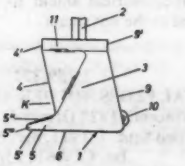
3,759,277
PORTABLE SHELTER
Calvin P. Glade, 903 N. Waterview, Richardson, Tex.
Filed Apr. 16, 1971, Ser. No. 134,707
Int. Cl. E04b 1/344
U.S. Cl. 135—4 R **6 Claims**

A portable shelter comprises a central triangular section and three exterior triangular sections with each of the exterior sections being flexibly attached to respective sides of the cen-



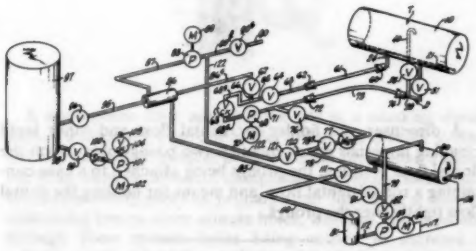
tral section whereby a variety of shelter configurations may be achieved.

3,759,278
HANDLE FOR UMBRELLA
Hans Hoffmann, Essen, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Sept. 7, 1972, Ser. No. 286,917
Claims priority, application Germany, Sept. 18, 1971, P 21 46 721.0
Int. Cl. A45b 9/02
U.S. Cl. 135—46 M **1 Claim**



A handle for an umbrella and particularly a flat umbrella, wherein the handle has a shape of a rhomboid with the greatest dimension of the rhomboid parallel to the axis of the umbrella stick and a projection is provided extending from the bottom wall portion of the handle beyond the bottom corner of the handle subtending the obtuse angle.

3,759,279
METHOD, APPARATUS AND SYSTEM FOR TRANSPORTING, CONVERTING AND UNLOADING DRY SUGAR
William C. Smith, Jr., 1016 Rhodes, Tyler, Tex.
Filed June 30, 1972, Ser. No. 267,964
Int. Cl. C13d 1/02
U.S. Cl. 137—1 **18 Claims**



A method, system and apparatus for transporting dry granulated sugar by motor vehicle to a point of use and converting the dry sugar into liquid sugar or sugar solution of the desired Brix scale at such point of use. A semi-trailer transport tank having an improved sparger circulating system for converting dry sugar to liquid form at a desired Brix value while in the transport tank. A system for adding water at a temperature

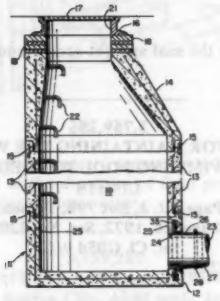
and in a quantity desired, to the dry granulated sugar in a transport tank for recirculating the same in the transport tank to produce liquid sugar of a desired Brix value, and including means for removing and conducting the liquid sugar from the transport tank to a storage tank or processing system.

3,759,280

PIPE TO MANHOLE SEAL

Harold V. Swanson, Morris Plains, N.J., assignor to Interpace Corporation, Parsippany, N.J.

Filed May 24, 1971, Ser. No. 146,180
Int. Cl. F16l *5/00*
U.S. Cl. 137—363 **5 Claims**



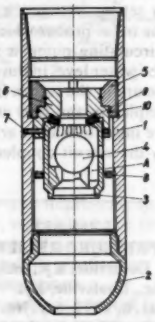
A seal is here taught for use between a concrete side wall of a manhole installation and a pipe which penetrates through the side wall. Pipes for use in this service generally have rough cylindrical outer surfaces which are not truly round. The seal includes an elastomeric sleeve which is positioned about the outer surface of the pipe and which is clamped at one of its ends thereto. The sleeve is provided at its other end with an outwardly-flared flange. The flange may be attached to the wall by means of a firm annulus and bolts or the like. In a preferred embodiment the flange is cast into the wall and has corrugations to insure good bond therewith. The sleeve can be positioned within the hole, out of harms way, while the concrete wall is being poured.

3,759,281

CEMENTING FLOAT SHOE

Persiu Falcuta, Burcuresti, Romania, assignor to Grupul Industrial Pentru Foraj si Extractia Titeilului Bucuresti, Ilfor, Romania

Filed Nov. 19, 1971, Ser. No. 200,348
Claims priority, application Romania, Nov. 20, 1971, 65045
Int. Cl. F16k *17/40*
U.S. Cl. 137—68 **1 Claim**



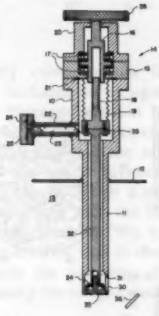
A float valve for a well casing comprises a fixed ring or seat threaded onto the wall of a generally cylindrical shell and receiving a tubular boss to which the ball cage is threaded. The cylindrical boss and the cage are anchored on the shoe casing by a plurality of shear pins so that they may be dislodged by the application of downward over-pressure in the event the valve becomes plugged. A fluted ring is provided beyond the aforementioned fixed ring to intercept the boss and thereby retain the valve while permitting fluid circulation through the flutes.

3,759,282

ULTRA-HIGH VACUUM ISOLATION VALVE FOR VOLATILE MATERIALS

Kenneth H. Kaldenback; John Kovals, and John H. Pollard, all of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1972, Ser. No. 302,165
Int. Cl. F16k *17/40*
U.S. Cl. 137—68 **1 Claim**



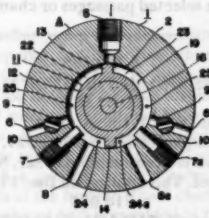
An ultrahigh vacuum isolation valve comprising a housing having a side tube containing a frangible vial of volatile material and a linear motion feedthrough mechanism in the housing with an enlarged flange portion for rupturing the vial as the valve is opened. A deformable copper seal is held by a retaining screw at a distal end of the linear feedthrough whereat a valve orifice having inclined valve seating surfaces is located.

3,759,283

VIBRATION PRODUCING APPARATUS

Teruyuki Maeda, 6-5, Kita-machi, 3-chome, Kichijoji, Musashino City, Tokyo, Japan

Filed Nov. 29, 1971, Ser. No. 202,861
Claims priority, application Japan, Sept. 10, 1971, 46/69764; Dec. 10, 1970, 45/109891
Int. Cl. F01l *21/02*; F01c *9/00*; F01l *25/06*
U.S. Cl. 137—106 **4 Claims**



A vibration producing apparatus comprising a frame, a cylindrical space formed in said frame, a fluid supply port communicating with said cylindrical space, a vibratory member mounted in said cylindrical space for angular rotation, and two shield projections disposed at positions diametrically opposed to each other on an outer peripheral surface of

said vibratory member and extending in opposite directions into sliding engagement with an inner peripheral surface of said cylindrical space. A vibration producing apparatus further comprises means for causing one of said shield projections to be disposed on the fluid supply port side and precluding angular rotation of said vibratory member over and above a predetermined angle, and ports adapted to maintain communication with said cylindrical space outside the range of movement of the other shield projection of said vibratory member.

3,759,284

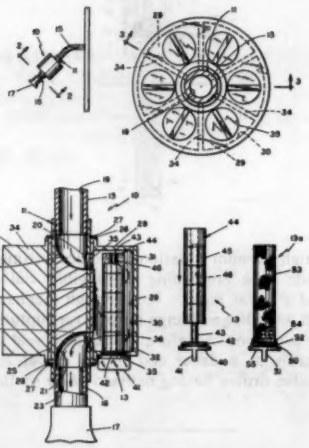
FLUID TREATING DEVICE

Duane E. Crowley, 3649 Elin Ct., Flossmoor; Roy M. Hoffmann, 60 Judith Ln., Chicago Heights, both of Ill., and Evan D. Roberts, 818 Elm, Flossmoor, Ill.

Filed Nov. 19, 1971, Ser. No. 200,442

Int. Cl. B01f *1/00*; E03c *1/046*; B01d *11/02*

U.S. Cl. 137—268 **5 Claims**



Disclosed herein is a device for treating fluids and is illustrated by structures including a barrel connectable in series in the fluid supply, a body rotatable on the barrel, selectively alignable passages in the barrel and the body for serially passing fluid therethrough, serially water treating means externally insertable in selected passsages or chambers in the body.

3,759,285

PRE-CAST BASE AND METHOD FOR MANHOLES AND THE LIKE

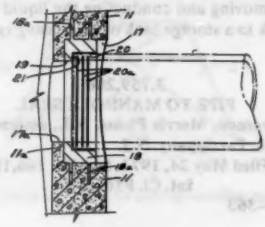
Ronald E. Yoakum, R.R. 1, Union, Ohio

Continuation-in-part of Ser. No. 202,529, Nov. 26, 1971, abandoned, which is a continuation of Ser. No. 7,812, Feb. 2, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 314,025

Int. Cl. F16l *5/02*; F16j *15/50*

U.S. Cl. 137—363 **8 Claims**

Pre-cast base for access pits such as manholes and the like includes resilient rubber-like sealing means and method of positioning same at desired locations. The sealing means is anchored in monolithically cast wall and bottom portions of the base and enables precise positioning of the base at a desired location while maintaining sealed joints at the juncture between the base and inlet and/or outlet pipes, and permits universal independent movement of either said pipes or of the



base to maintain the seal and yet accommodate changing job conditions.

3,759,286

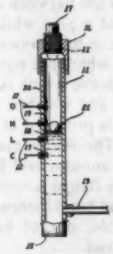
APPARATUS FOR MAINTAINING THE WATER LEVEL WITHIN A SWIMMING POOL TO PREDETERMINED LIMITS

Littleton Dennis Page, Rt. 2, Box 798, Tucson, Ariz.

Filed Jan. 26, 1972, Ser. No. 220,976

Int. Cl. G05d *9/12*

U.S. Cl. 137—392 **2 Claims**



In order to maintain the water level of a swimming pool within predetermined limits, an electrically operated valve connected between a source of make up water and the pool is opened whenever the water falls below a first predetermined level and is closed whenever the water reaches a second, higher predetermined level. Water level detection is carried out in a vertically disposed sensing tube in liquid communication with a point in the return line of the filtering circuit. A plurality of vertically separated conductive probes extend into the sensing tube to provide water level information according to conduction paths set up between a lowermost, common probe and those of the other probes which are below the water level. When the recirculating pump is not in operation, the water level reflects the water level in the pool. When the pump is energized, the pressure in the return line rises such that the sensing tube fills completely and thus automatically prevents operation of the valve inasmuch as an artificial high level condition is detected by the circuit coupled to the level sensing probes.

3,759,287

TWO-WAY PRESSURE RELIEF ASSEMBLY

Jimmie D. York, Jr., Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

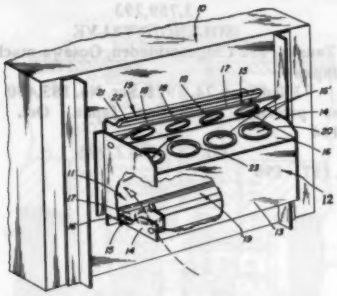
Filed Mar. 6, 1972, Ser. No. 231,904

Int. Cl. F16k *45/00*

U.S. Cl. 137—493.9 **3 Claims**

A two-way pressure relief assembly for a plenum chamber including, at least two ported valve seats communicating with an outlet of the plenum chamber, and a plurality of relief

valves adapted to respond to fluid pressure surges of a preselected magnitude, one valve cooperating with each ported valve seat, with at least one of the valves being responsive to fluid pressure surges of a preselected magnitude in a direction counter to the direction of fluid pressure surges to which the remainder are responsive.

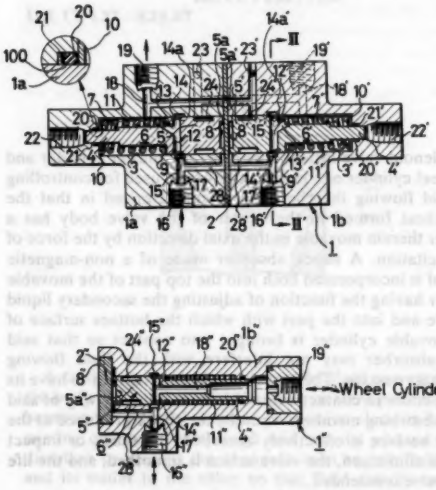


3,759,288

SAFETY VALVE ASSEMBLY

Uichiro Kobashi, Kariya City, Aichi pref., Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi pref., Japan

Filed Apr. 8, 1971, Ser. No. 132,460
Int. Cl. B60t 8/26; F16k 31/363
U.S. Cl. 137—498 **6 Claims**



This invention relates to improvements in and relating to a safety valve assembly, especially to be fitted in the hydraulic brake system for wheels of an automotive vehicle, although the invention may find its application in other uses in a hydraulic pressure piping system.

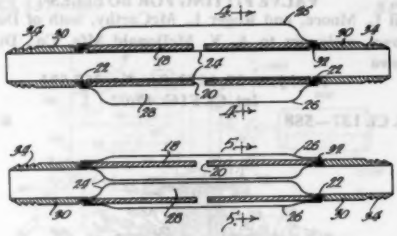
The safety valve assembly is adapted for operation to close the hydraulic pressure piping system when the outlet liquid quantity exceeds the inlet liquid quantity over a certain predetermined degree. This feature is especially valuable to interrupt oil outlet, when, as an example, a burst or the like cause should take place in the brake piping system.

3,759,289

PERFUSION SAFETY VALVE

Richard A. DeWall, 247 Northview Rd., Dayton, Ohio

Division of Ser. No. 168,642, Aug. 3, 1971, Pat. No. 3,717,174.
This application Sept. 27, 1972, Ser. No. 292,671
Int. Cl. A61m 5/16; F16k 17/00, 21/04
U.S. Cl. 137—525 **3 Claims**



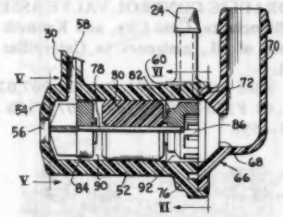
A perfusion safety valve for use in blood oxygenating systems. The valve includes an elongated, rigid, perforated tube and interiorly disposed therein is a collapsible membrane-like wall which may collapse to cut off the flow of blood through the tube. Exteriorly of the tube is a second membrane-like wall and the space between the two membrane walls is filled with a liquid. When a slight vacuum is pulled against the inner membrane wall, the liquid will pass through the perforations of the tube into the interior of the tube to cause collapse of the interior wall to shut off the flow through the valve to preclude the pumping of air into the arterial system of a patient using the oxygenating system.

3,759,290

WINDSHIELD WASHER SYSTEM HAVING SUBMERGED AIR DRIVEN PUMP

Anthony R. D'Alba, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Feb. 28, 1972, Ser. No. 229,644
Int. Cl. B60s 1/48; A47l 1/02
U.S. Cl. 137—565 **5 Claims**



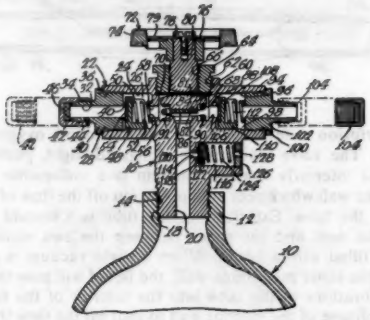
A windshield washer pump includes a rotor assembly comprising a pump impeller and a turbine wheel secured at opposite ends of a shaft; the shaft is journalled in a bearing disposed between the impeller and the turbine wheel. The assembly is disposed within a cylindrical housing; the bearing is press fitted therein. A source of compressed air is applied to opposite sides of the turbine wheel through an inlet port which communicates with a pair of grooved passages, each of the passages terminates at the turbine wheel chamber on opposite sides thereof. An exhaust port is provided in the turbine wheel chamber. An opening in the end wall of the cylindrical housing adjacent to the impeller serves as a washer solvent inlet port. An outlet port is formed in the housing side wall communicating with the impeller. The pump assembly is disposed within a solvent reservoir and is submersed in the solvent. Hoses connect the compressed air inlet port, the compressed air exhaust port and solvent discharge port with corresponding

ports in the lid of the solvent reservoir. The discharge port in the lid is in turn connected to a pair of washer nozzles adjacent to the lower edge of the windshield. A manual control is provided to control communication between the compressed air inlet port at the pump and the source of compressed air.

3,759,291
VALVE FITTING FOR BOTTLES

Cecil L. Moore, and Roger L. McCarthy, both of Dubuque, Iowa, assignors to A. Y. McDonald Mfg. Co., Dubuque, Iowa

Filed June 29, 1972, Ser. No. 267,591
Int. Cl. F16k *45/02*
U.S. Cl. 137—588 6 Claims

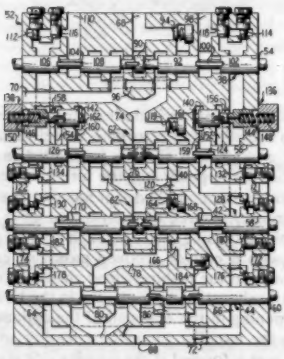


A valve fitting for bottles adapted to contain pressurized liquids or gases such as refrigerants. The valve fitting includes a main, manually operated valve, an inlet check valve, a pressure release valve and a pressure retention valve. The latter is employed so as to maintain a slight pressure in the bottle when the same has been emptied to preclude entry of foreign material or non-wanted gases therein prior to refilling of the bottle. This permits the bottle to be regularly refilled without extended cleaning operation.

3,759,292
HYDRAULIC CONTROL VALVE ASSEMBLY

Donald L. Bianchetta, Coal City, and Kenneth R. Lohbauer, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1971, Ser. No. 207,028
Int. Cl. F15b *13/06*; F16k *11/07*; F15b *11/00*
U.S. Cl. 137—596 9 Claims

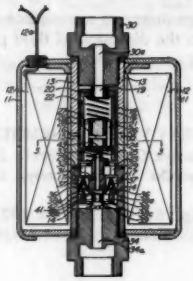


A valve assembly comprising a plurality of distributor valves for operation of a plurality of hydraulic motors is provided with a plurality of inlets for a plurality of supply sources. The distributors are interconnected so that the implements may be operated by separate sources or the sources combined for selective operation of certain implements.

3,759,293
SOLENOID VALVE

Saburo Tanaka, 132 Chigusashinden, Oosawa-machi, Kimitsugun, Japan

Filed Sept. 24, 1971, Ser. No. 183,450
Claims priority, application Japan, Oct. 27, 1970, 45/106114
Int. Cl. F16k *31/02*
U.S. Cl. 137—598 2 Claims



A solenoid valve installed between the master cylinder and the wheel cylinder of a motor vehicle and used for controlling the fluid flowing therebetween is characterized in that the valve chest formed in the center of the valve body has a cylinder therein movable in the axial direction by the force of coil excitation. A shock absorber made of a non-magnetic material is incorporated both into the top part of the movable cylinder having the function of adjusting the secondary liquid pressure and into the part with which the bottom surface of said movable cylinder is brought into contact so that said shock absorber may not interfere with the fluid flowing through its passage. The movable cylinder is driven to have its bottom come in contact with said counterpart by way of said shock absorbing members whereby the shock produced at the contact surface is effectively absorbed, the shock or impact sound is minimized, the valve action is smoothed, and the life of the valve is extended.

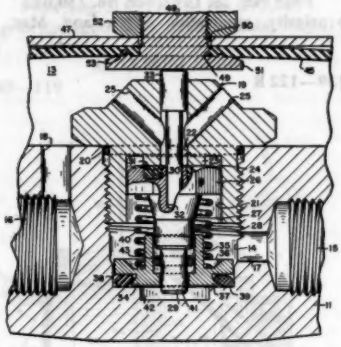
3,759,294
PRESSURE REGULATOR

Robert M. Kongelka, Washington, Pa., assignor to Superior Valve Company, Washington, Pa.

Filed June 7, 1972, Ser. No. 260,546
Int. Cl. F16k *17/04*
U.S. Cl. 137—612.1 3 Claims

The specification discloses a pressure regulating valve device for regulating to a relatively low uniform delivery pressure a high-pressure supply of fluid, such as a gas. The valve device includes a release valve arrangement which effects the release of high-pressure fluid that is undesirably trapped in the valve device due to leakage past a seal, such as O-ring seals,

associated with a valve stem. The release valve arrangement operates responsively to shut-off of the supply of pressure to



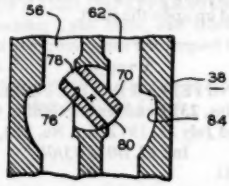
vent the trapped fluid via the normal delivery passages of the valve device.

3,759,295

CONTROL VALVE FOR HYDROSTATIC DRIVE

Donald S. Dence, Brooklyn, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 19, 1971, Ser. No. 135,283
Int. Cl. F16k 11/00
U.S. Cl. 137—625.47 7 Claims



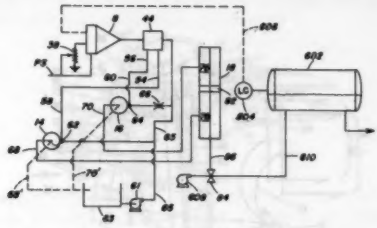
A control valve having two parallel fluid passages through the body portion thereof and a valve element pivotally located between the parallel passages. The valve element has a connecting channel therethrough and may be pivoted in either direction to present the channel's inlet to one fluid passage and its outlet to the other so that fluid may be selectively diverted through the channel from passage to passage by pivoting the valve element. The passage into which the channel's inlet is pivoted is reduced in flow area when the valve element is pivoted into that passage, but enlargements are provided in both passages so that the flow area of the passage into which the channel outlet is pivoted is not substantially reduced, thereby encouraging fluid to flow through the channel in the desired direction. This control valve may be used in a hydrostatically driven vehicle having a fixed ratio flow divider which directs equivalent flows to the individual driving motors of the vehicle, the control valve being located in the fluid circuit between the flow divider and the driving motors to selectively divert a portion of the working fluid intended for one motor to the other and thereby provide a "differential" action between driving wheels.

3,759,296

CONTROL DEVICE

Ward F. O'Connor, Deanville, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 82,749, Oct. 21, 1970, and a continuation-inlpart of Ser. No. 837,673, June 30, 1969. This application Apr. 14, 1971, Ser. No. 133,915
Int. Cl. F15c 1/16
U.S. Cl. 137—805 8 Claims



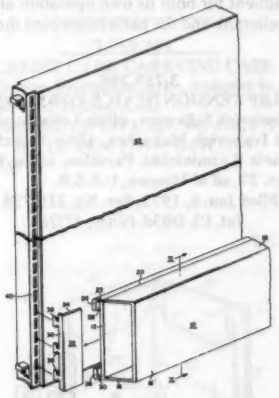
This invention relates to control apparatus for equipment, and more particularly to highly reliable fluid control apparatus for governing the various functions of equipment.

3,759,297

UTILITY LINE HOLDER

William C. Anderson, and Raymond A. Bleeker, both of Grand Rapids, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1972, Ser. No. 216,416
Int. Cl. F16l 9/00
U.S. Cl. 138—156 2 Claims



A utility line holder for containing and concealing interior office utility lines for office electrical equipment and the like which comprises a wall mounted, normally closed, flexibly openable elongated tubular channel for use particularly in modular space dividing office wall systems.

3,759,298

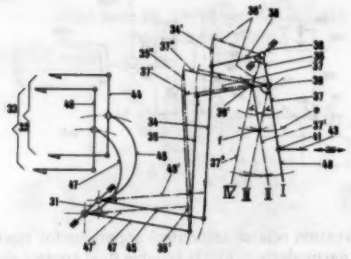
HEDDLE FRAME LIFT MECHANISM

Werner Kaufmann, Horgen-Zurich, Switzerland, assignor to Staubli Ltd., Horgen-Zurich, Switzerland

Filed Aug. 26, 1971, Ser. No. 175,117
Claims priority, application Switzerland, Aug. 27, 1970, 12803/70
Int. Cl. D03c 13/00
U.S. Cl. 139—82 8 Claims

Lift mechanism for a heddle frame, particularly applicable to a heddle frame in a machine for making pile fabric. For

controlling the heddle or harness frames of the loom adapted particularly for weaving pile fabric there is provided a dobby having two pairs of conventional draw knives each pair mounted on a crosshead. Said crossheads are operated by a pair of bellcrank levers pivoted on a common axis with a first arm of each of said bellcranks pivoted to the middle of each crosshead. A first further bellcrank is pivoted to a fixed axis and a first arm thereof connected by a linkage to the second



arm of one of the first pair of bellcranks. A second further bellcrank is pivoted to the second arm of said first further bellcrank and has its first arm connected by a linkage to the second arm of the other of said first pair of bellcranks. The output for said dobby is applied to suitable means by the second arm of said second further bellcrank and is preferably adjustable toward and away from the pivot point thereof to provide adjustment for both its own operation and that of the first further bellcrank and the parts connected thereto.

3,759,299

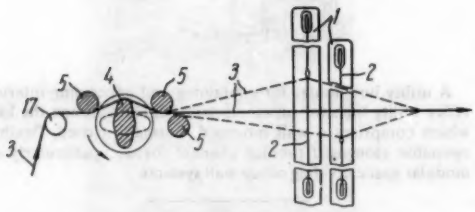
WARP TENSION DEVICE FOR LOOMS

Anatoly Grigorievich Selivanov, ulitsa Lobachecskogo, 44, kv. 59; Nikolai Ivanovich Makachev, ulitsa Tatischeva, 17, kv. 33, and Maria Kuzminichna Parshina, ulitsa Tsjurupy, 12, korpus 1, kv. 27, all of Moscow, U.S.S.R.

Filed Jan. 6, 1972, Ser. No. 215,738

Int. Cl. D03d *49/04, 47/26*

U.S. Cl. 139—97 **4 Claims**



The device comprises a compensating roller made in the form of a feed worm which in its cross section has the shape of a rhomb with rounded vertices. On either side of the roller there are mounted warp guide rods oriented relative to said roller so, that when the shed is crossed, formed between them is a compensation loop which is drawn out when the shed is fully open.

3,759,300

INTERMEDIATE WEFT THREAD SUPPLY APPARATUS FOR LOOMS

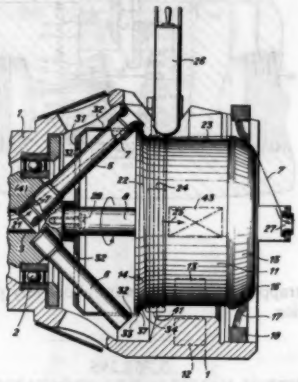
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 28, 1972, Ser. No. 230,023

Claims priority, application Switzerland, Mar. 4, 1971, 3174/71

Int. Cl. D03d *47/36*

U.S. Cl. 139—122 R **7 Claims**



In a thread storage and supply device including a drum supported at one end from a shaft and including means to wind a thread onto the drum for subsequent pull-off over the free end of the drum, an annular member surrounds the drum with close clearance therefrom at the end from which the drum is supported, thereby preventing the thread from becoming entangled or wound up upon the shaft.

3,759,301

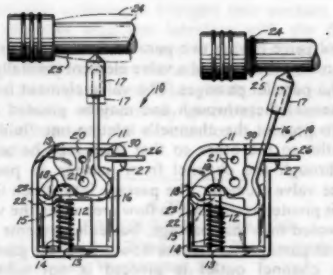
FILLING FEELER DEVICE FOR LOOMS

Herman L. Phillips, 231 Brashier St., Griffin, Ga.

Filed July 21, 1972, Ser. No. 273,832

Int. Cl. D03d *45/08*

U.S. Cl. 139—281 **4 Claims**



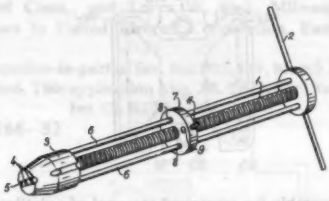
This device is a filling feeler mechanism for textile looms and consists primarily of a housing with guide means for a spring-loaded finger which when a bobbin is emptied, will move a trip wire which will trip other mechanisms of the loom so as to cause the loom to proceed to eject the empty bobbin and replace it with a bobbin full of filling.

3,759,302

WIRE FIXING DEVICE

Christopher George Attenborough, Winchelsea, England, assignor to National Research Development Corporation, London, England

Filed Aug. 3, 1972, Ser. No. 277,567
Claims priority, application Great Britain, Aug. 19, 1971, 38,988/71
Int. Cl. B21f *15/04*
U.S. Cl. 140—119 7 Claims



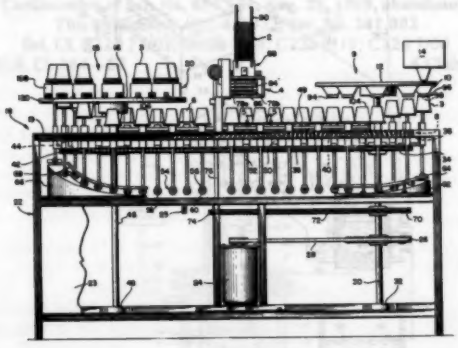
A wire fixing device, for fixing wire in orthopedic surgery or other circumstances by controlled twisting together of the free end portions of the wire, comprises an elongate screw, a nut for engagement with the screw and having means for securing the free end portions of a wire to be fixed, a guide member with two passageways for the wire free end portions, and at least one slide member which extends from the guide member for longitudinal slidable engagement relative to and rotation with the nut. In use of the device the wire free ends are passed through the guide member passageways and secured with the nut, and the screw is screwed through the nut to draw this from the guide member and tense the wire. Then, the nut is screwed towards the guide member to twist the wire while feeding wire into the twist in a controlled manner to avoid breakage through excess tension build-up.

3,759,303

CUP HANDLING APPARATUS

Benjamin D. Henrichs, Lake Mills, and Gordon A. Djuren, Kensett, both of Iowa, assignors to Compact Industries, Inc., Northbrook, Ill.

Filed June 9, 1971, Ser. No. 151,271
Int. Cl. B65b *43/44*
U.S. Cl. 141—1 13 Claims



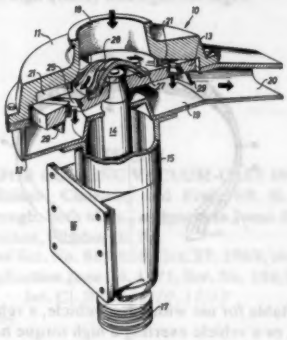
An apparatus for individually feeding, filling, and stacking a supply of cups includes a conveyor adapted to reeive and support the cups individually and carry them from a cup feeding station to a filling station, where the cups individually are moved toward and away from the filling mechanism, and then carry the cups to a stacking station.

3,759,304

MACHINE FOR CONVERTING WOODEN PIECES INTO CHIPS

Lars-Erik Lundmark, Taby, and Evald Larsson, Nassjo, both of Sweden, assignors to AB Krima Maskinfabrik, Nassjo, Sweden

Filed Mar. 17, 1972, Ser. No. 235,648
Int. Cl. B27c *1/00*
U.S. Cl. 144—180 10 Claims



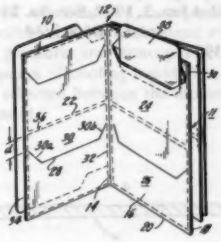
A machine for converting wooden pieces, such as those formed by a chopping procedure, into chips to be used in chip and particle boards, comprises cutting tools disposed in annular spaces through which the wooden pieces are fed radially outwards and which taper in that direction.

3,759,305

CREDIT CARD CARRYING CASE

Donald E. McIntyre, Scottsdale, Ariz., assignor to Ambassador International, Inc., Tempe, Ariz.

Filed Oct. 18, 1971, Ser. No. 190,079
Int. Cl. A45c *11/18*; G09f *1/10*
U.S. Cl. 150—39 9 Claims

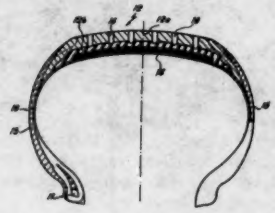


One or more pocket sections of flexible transparent or translucent plastic may be provided with one or more card-holding sections. Each card-holding section is provided with a protective flap or closure scored in the facing-ply of the closure and a credit card inserted into the pocket is retained therein irrespective of the handling to which the pocket is subjected. The protective flap or closure is normally integral with the facing-ply and is formed between the vertically extending edges defining the width of the pocket at some intermediate point between the horizontal edges defining the height of the pocket.

3,759,306
TIRE HAVING REINFORCING WITH HIGH MODULES OF ELASTICITY

Henri Greiner, Conflans Sainte Honorine; Yves Masson, Paris, and Jean Olagnier, Levallois-Perret, all of France, assignors to Pneumatiques, Caoutchouc Manufacture Et Plastiques, Kleber-Colombes, Colombes, France

Filed Oct. 26, 1971, Ser. No. 192,201
Claims priority, application France, Oct. 27, 1970, 7038760
Int. Cl. B60c 1/00, 19/00
U.S. Cl. 152—374 6 Claims



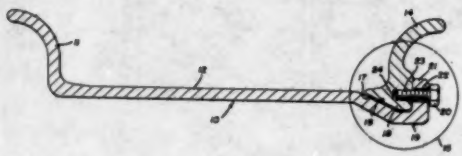
A tire suitable for use with a fast vehicle, a vehicle carring a heavy load, or a vehicle exerting a high torque having a tread, an outer portion of the tread being sculptured and having hollows, a carcass and a reinforcing member having an outer face spaced radially from the level of the bottoms of the hollows of the sculptured portion, whrein there is a second portion of the tread between the level of the bottom of the sculptured portion and the outer face of the reinforcing member which second portion is made of a rubbery mixture having a high modulus of elasticity at least equal to 40 kg/cm² at 100 percent elongation, whilst the sculptured outer portion of the tread is made of a rubbery mixture having a less high modulus of elasticity.

This tire displays high resistance to any tendency of the sculptured portion to be worn away or stripped off whilst retaining its other essential qualities.

3,759,307
RIMS

William D. Walther, Dayton, and Robert A. Deregnaucourt, Centerville, both of Ohio, assignors to The Dayton Steel Foundry Company, Dayton, Ohio

Filed Jan. 3, 1972, Ser. No. 214,994
Int. Cl. B60c 7/24
U.S. Cl. 152—396 7 Claims

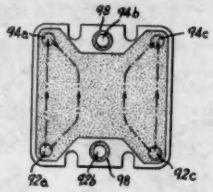


A demountable rim having fixed and removable bead flanges for mounting tires on a wheel and having safety features in compliance with Federal Motor Vehicle Safety Standard No. 120. The removable bead flange is carried on and mounted within an edge of the rim base portion and a series of circumferentially located capped bolts loosely connect the removable flange to the rim edge to maintain said flange on the rim in the event a tire mounted on the rim is unintentionally deflated. Various forms of rim edges and removable flanges are provided.

3,759,308
PLATE EVAPORATOR FOR REMOVING VOLATILES FROM LIQUIDS

Adam George Gebauer, Lighthouse Point, Fla., assignor to Parkson Corporation, Fort Lauderdale, Fla.

Filed June 15, 1970, Ser. No. 46,283
Int. Cl. B01d 1/22, 1/00; F28f 3/08
U.S. Cl. 159—13 R 10 Claims

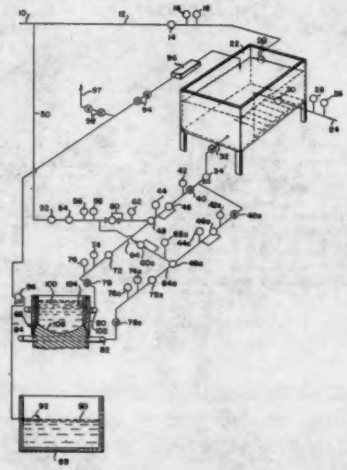


A plate assembly for improved removal of volatiles from a flowable material. The assembly includes one or more sets of port-type heat exchanger plates arranged in succession to provide a confined tortuous path of increased capacity for a high velocity flow of the volatiles-containing material. Variation of the gasketing of the plates, so as to include in the tortuous path the optimum number and combination of plate ports, provides increased capacity, while affording control of flow conditions within the assembly in correspondence with the sensitivities of the flowable material. One form of the assembly may constitute a plate contactor for effecting two-phase stripping of volatiles from the flowable material. Another possible form may be a plate evaporator for enhancing evaporative removal of the volatiles.

3,759,309
METHOD OF AND APPARATUS FOR COOLING CONTINUOUSLY CAST METAL

William Nighman, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 27, 1971, Ser. No. 147,495
Int. Cl. B22d 11/12
U.S. Cl. 164—4 17 Claims



A method of and apparatus for cooling continuously cast metal wherein the temperature of the coolant may be varied substantially instantaneously. A hot water coolant is applied either to the mold or the metal being continuously cast, or both. Suitably located sensor means at the locus of the mold

sense a condition incident to the continuous casting operation. In a preferred form of the invention, separate means are employed to retard the cooling of the metal as it emerges from the bottom of the mold in order to prevent cracking of the metal.

3,759,310

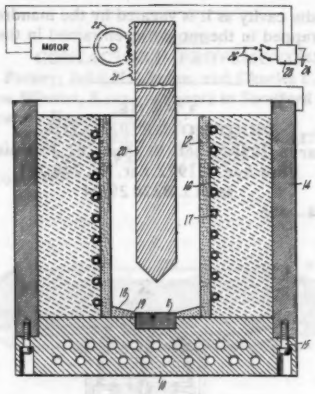
METHOD AND APPARATUS FOR PROVIDING SINGLE CRYSTAL CASTINGS USING A CONSUMABLE ELECTRODE

Robert B. Barrow, Cheshire; Matthew F. Smith, Shelton, both of Conn., and Larry W. Sink, Milwaukie, Oreg., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 803,539, March 3, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,215

Int. Cl. B22d *27/02, 25/06*

U.S. Cl. 164—52 **7 Claims**



Apparatus and method by which to produce single crystal articles using a ceramic mold and consumable arc melting technique with cooling from a chill plate at the base of the apparatus and with the ceramic mold limiting the heat loss laterally from the molten metal.

3,759,311

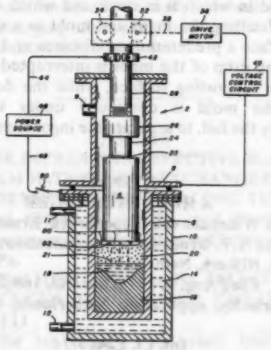
ARC SLAG MELTING

Harold S. Jackson, Troy, N.Y., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 854,144, Aug. 29, 1969, abandoned. This application Apr. 4, 1972, Ser. No. 241,082

Int. Cl. B22d *27/02;* **H05b** *7/18;* **C22b** *9/10;* **C22d** *7/00*

U.S. Cl. 164—52 **6 Claims**



The method of consumable electrode casting an alloyed metal ingot by electro-slag refining to produce a high quality homogenous ingot wherein a layer of molten slag in the furnace separates the electrode from the molten pool formed thereunder. The electrode is lowered into the slag layer and electrical current is flowed substantially through the electrode and the slag and subsequently, is withdrawn from the slag sufficiently to establish an electric arc between the electrode and the top of the slag whereby the electrode is melted by the heat of the arc and the slag thereunder, to form droplets of electrode metal which migrate from the electrode through the slag layer and accumulate in a pool of molten metal thereunder. The molten pool is continually solidified at a predetermined rate to form the high quality homogenous ingot.

3,759,312

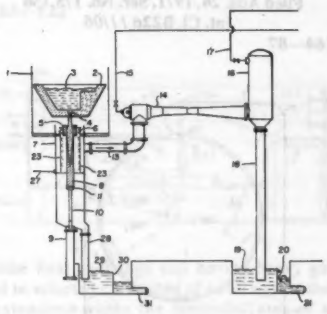
PROCESS FOR COOLING VACUUM-CAST INGOTS

Eugene A. Mizikar, Clairton, and Frederick H. Rehmus, Baldwin Borough, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 869,816, Oct. 27, 1969, abandoned. This application June 24, 1971, Ser. No. 156,554

Int. Cl. B22d *11/10, 11/12*

U.S. Cl. 164—64 **5 Claims**



An ingot of metal continuously cast under vacuum is withdrawn into a cooling chamber maintained at a pressure intermediate casting pressure and atmospheric pressure and cooled therein by sprays of cooling liquid. The seal between the chamber is that effected between the molten metal in the ingot mold and the mold.

3,759,313

METHOD OF STARTING A CASTING MACHINE HAVING CATERPILLAR-TYPE MOLDS FOR CASTING NONFERROUS METAL STRIPS

Ivan Gyongyos, Montana, Switzerland, assignor to Prolizenz AG, Chur, Switzerland

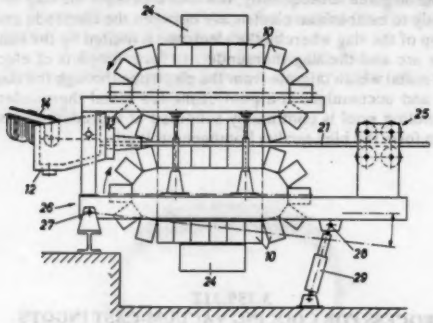
Filed Apr. 12, 1971, Ser. No. 133,007

Int. Cl. B22d *11/06, 11/08*

U.S. Cl. 164—87 **4 Claims**

Disclosed is a method of pouring molten metal on caterpillar-type molds of a still-standing and a low angle inclined machine, until a leading end of the strip is formed. Thereupon,

the mold tracks are set into motion and simultaneously the inclination of the entire machine is increased for an optimum



continuous casting operation. The casting machine is mounted on a tiltable frame controlled by a hydraulic jack.

3,759,314

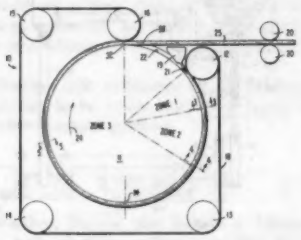
HIGH CAPACITY CONTINUOUS CASTING METHOD

John H. Murphy, Atlanta, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Aug. 26, 1971, Ser. No. 175,156

Int. Cl. B22d *11/06*

U.S. Cl. 164—87 **4 Claims**



A high capacity casting method and apparatus wherein metal in a molten condition is fed into a mold formed by the peripheral groove in a rotatable casting wheel and a flexible band, the metal is cooled in the mold until the metal has substantially solidified, and the solidified metal is removed from the peripheral groove of the casting wheel at a position substantially above the casting wheel. The cast metal is removed from the peripheral groove of the casting wheel. The cast metal is removed from the peripheral groove of the casting wheel as the cast metal approaches a horizontal direction of movement about the casting wheel, at an elevation above the elevation where the metal is fed in a molten condition into the peripheral groove.

3,759,315

INJECTION MOLDING APPARATUS

Horace Stanley Smart, Malvern, Australia, assignor to Reginald Richard Mills, Burwood, Victoria, Australia, a part interest

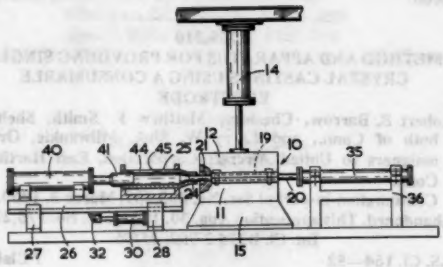
Filed Mar. 1, 1971, Ser. No. 119,578

Claims priority, application Australia, Mar. 9, 1970, 565/70

Int. Cl. B22d *17/00*

U.S. Cl. 164—120 **4 Claims**

A method of pressure die-casting a member by providing a mandrel in the die cavity of a mould to exclude air therefrom, and withdrawing the mandrel at a controlled rate as molten metal is delivered to the mould so that the incoming metal occupies the die cavity as it is vacated by the mandrel and thus air is not trapped in the mould or entrained in the incoming molten metal.



3,759,316

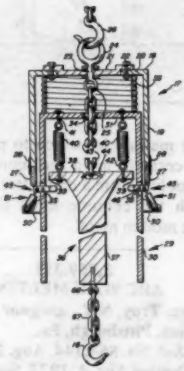
INGOT MOLD SEPARATOR

Gary C. Saarup, 2950 N. 46th St., Apt. 201, Phoenix, Ariz.

Filed Apr. 3, 1972, Ser. No. 240,717

Int. Cl. B22d *29/04*

U.S. Cl. 164—405 **9 Claims**



This specification discloses a device for separating an ingot from a mold in which it is stuck and which operates on the principle of raising the ingot and mold as a unit from a supporting surface a predetermined distance and then letting the unit fall. The drop of the ingot is interrupted before the unit reaches the supporting surface, while the downward movement of the mold is continued under the momentum generated by the fall, to separate the ingot from the mold.

3,759,317

A HEAT EXCHANGER

Alfred Erich Wibrandt van Diepenbroek, Ermelo, Netherlands, assignor to N.V. Bronswerk Apparatenbouw v/h Moring & Steenaart, Nijkerk, Netherlands

Filed Aug. 5, 1971, Ser. No. 169,268

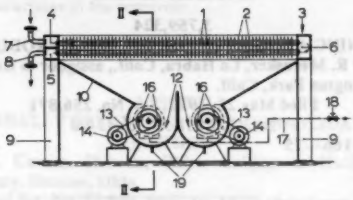
Claims priority, application Netherlands, Aug. 10, 1970, 7011801

Int. Cl. F24f *3/14*

U.S. Cl. 165—19 **3 Claims**

A heat exchanger in which wherein a first fluid flows through heat-exchanging tubes and a second fluid flows

around the heat-exchanging tubes, one of these fluids being a cooling fluid which withdraws heat from the other fluid, the



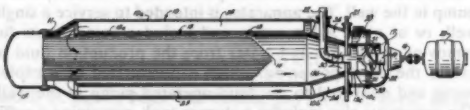
cooling fluid being a gas supersaturated with water. The cooling fluid is supplied by a device for supersaturating a gas, in particular air, with water.

3,759,318

CONTACTOR IMPROVEMENTS

David H. Putney; John H. Lindau, and Charles L. West, all of Shawnee Mission, Kans., assignors to Stratford Engineering Corporation, Kansas City, Mo.

Filed Mar. 15, 1972, Ser. No. 234,827
Int. Cl. F28f *13/12*; B01f *5/10*
U.S. Cl. 165—108 **14 Claims**



An improved, horizontal, continuous contacting-mixing device utilizing internal circulation and having therewith an impeller, a circulation tube and (usually) an indirect heat exchanging tube bundle; an improved type of horizontal circulating, mixing, reaction vessel or contactor; in a horizontal contactor vessel where the impeller is received in lesser internal diameter shell and circulating tube zones, offsetting the cones of the outer shell and circulation tube downwardly at the impeller end of the vessel, thereby to cure fluid flow deficiencies by removing tee necessity of lifting upwardly into the impeller circulating liquids or fluids; reshaping both the circulation tube and outer shell of a horizontal contactor-type reaction vessel in the transition zone between the lesser internal diameter portions thereof conventionally housing the mixing and driving impeller and the greater internal diameter portions thereof conventionally (usually) including a large indirect heat exchanging tube bundle into an offset cone shaped, or offset frusto-conical configuration.

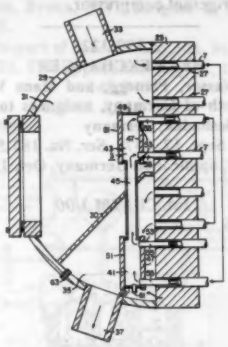
3,759,319

METHOD FOR INCREASING EFFECTIVE SCAVENGING VENT STEAM WITHIN HEAT EXCHANGERS WHICH CONDENSE VAPOR INSIDE LONG TUBES

Paul D. Ritland, Clifton Heights, Pa., and Charles C. Peake, Media, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 1, 1972, Ser. No. 248,913
Int. Cl. F01k *17/00*; F28f *9/02*; F28b *1/00*
U.S. Cl. 165—111 **10 Claims**

A device for scavenging condensate from long heat exchange tubes by recirculating the steam which is passed through one portion of a U-shaped tube bundle through another portion of the tube bundle and thus reducing the build-up of slugs of liquid in the tubes by increasing the velocity therethrough without reducing the heat transfer surface and also protecting the welds which seal the tubes to the tube sheet from thermal shocks and stresses by incorporating



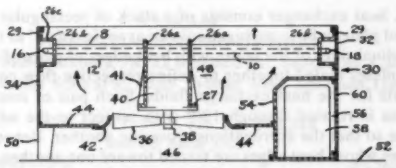
a thermal sleeve in the device which cooperates with the scavenging of condensate from the tube to provide optimum protection.

3,759,320

COIL AS MOUNT FOR ASSOCIATED EQUIPMENT

Russell H. Bullard, Wilmington, N.C., assignor to The Singer Company, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,329
Int. Cl. F24h *3/06*
U.S. Cl. 165—122 **5 Claims**



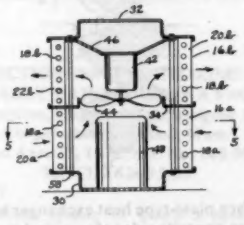
A fin-tube heat exchange coil having heavy gauge plates connected to selected core tubes of a coil so that the plates act as rigid extensions within the centrodial area of a coil. The plates, different than tube sheets, may be used either to orient and mount equipment, for example a motor, in a fixed relation to the coil or to mount and support the coil from its center or ends in a fixed relation to its associated equipment. The fixed mounting relation to the coil can be at all four mounting quadrants, i.e.: top, bottom, front and rear or angled therein.

3,759,321

CONDENSER COIL APPARATUS

Roland A. Ares, Wilmington, N.C., assignor to The Singer Company, New York, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,873
Int. Cl. F28f *13/12*
U.S. Cl. 165—125 **9 Claims**



A refrigerant condenser coil having a fan arranged to draw fresh air through one section of the coil and blow the air

through another section of the coil. Preferably the coil is annular in plan outline, and the fan is arranged in the space circumscribed by the annular coil. The circumscribed space can also contain a refrigerant compressor.

3,759,322

HEAT EXCHANGER

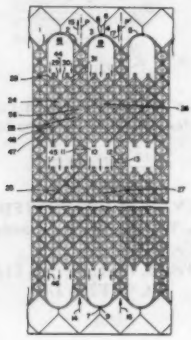
Gamal El Din Nasser, Planegg, and Hans Waldmann, Olfratshausen, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Sept. 17, 1971, Ser. No. 181,518

Claims priority, application Germany, Oct. 1, 1971, P 20 48 386.7

Int. Cl. F28f *3/00*

U.S. Cl. 165—166 **7 Claims**



A heat exchanger consists of a stack of rectangular corrugated plates whose corrugations run at angles of 45° to the longitudinal sides of the plates with bent edges of pairs of adjoining plates sealed together to define respective flow compartments for the heat exchange fluids. Each pair of contacting plates is rotated through 180° with respect to the adjoining plate so that the corrugations cross one another. Between the plates whose bent edges are turned toward one another, stacks of similarly corrugated plates are provided to constitute a regenerative heat exchange packing or heat-storage reservoir.

3,759,323

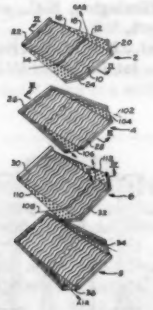
C-FLOW STACKED PLATE HEAT EXCHANGER

Harry J. Dawson, Dunlap; Wallace A. Hoftiezer, Peoria; David E. Keedy, Pekin; Ervin E. Mangus, Brimfield; Eugene K. Patton, and Joseph P. Grandfield, both of Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 18, 1971, Ser. No. 199,928

Int. Cl. F28b *3/04*

U.S. Cl. 165—166 **8 Claims**



A primary surface plate-type heat exchanger has sheets with triangular zones on opposite sides of a central rectangular area stacked alternately to provide a C-shaped flow path for two fluids. Corrugations in the sheet surface serve to direct fluid flow and to support adjacent sheets.

3,759,324

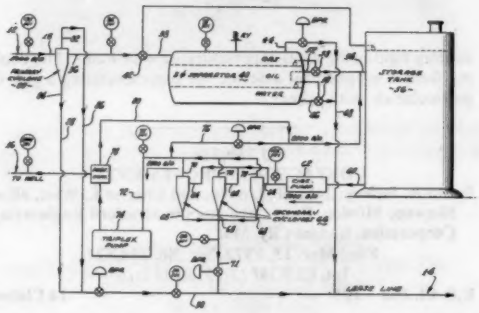
CLEANING APPARATUS FOR OIL WELL PRODUCTION

Mathew R. Mecusker, La Habra, Calif., assignor to Kobe, Inc., Huntington Park, Calif.

Filed May 25, 1972, Ser. No. 256,871

Int. Cl. E21b *33/03, 43/00*

U.S. Cl. 166—75 **4 Claims**



An apparatus for processing production fluid from an oil well in the field to obtain clean power oil for a fluid operated pump in the well. The apparatus is intended to service a single well, or at most a few wells, and includes components for removing solids, gas and water from the production fluid to obtain the clean power oil, which is pressurized by a triplex pump and delivered to the fluid operated pump in the well. The apparatus also includes a storage tank containing a sufficient reserve of clean power oil for circulating the fluid operated pump into and out of the well. A circulating pump having a capacity about twice that of the triplex pump continuously circulates the clean oil in the storage tank through parallel cyclones which remove any residual solids.

3,759,325

FOAM FOR SECONDARY AND TERTIARY RECOVERY

William B. Gogarty, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed June 24, 1971, Ser. No. 156,553

Int. Cl. E21b *43/22*

U.S. Cl. 166—273 **26 Claims**

Oil is moved in a subterranean oil-bearing formation by displacing the oil with a foamed oil-external micellar dispersion. The micellar dispersion, before foaming, contains 2 – 90 percent by volume hydrocarbon, at least about 4 percent by volume surfactant, about 5 – 90 percent by volume aqueous medium, and optionally 0.01 – 20 percent by volume cosurfactant and/or 0.0001 – 5 percent by weight electrolyte. Useful gases for foaming the dispersion include air, natural gas, nitrogen, flue gases, etc. The dispersion can be foamed before it is injected into the formation or it can be foamed in situ of the formation. A mobility buffer fluid and/or drive fluid may be used to displace the foam toward a production well to recover crude oil therethrough.

3,759,326

SECONDARY OIL RECOVERY METHOD

Charles A. Christopher, Houston; Joseph C. Allen, Bellaire, both of Tex., and Jack H. Kolaian, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,387

Int. Cl. E21b *43/22*

U.S. Cl. 166—275 **8 Claims**

A method for the production of hydrocarbons from subterranean reservoirs which comprises having at least one produc-

tion well and one injection well penetrating the reservoir and injecting a fluid into the injection well to drive the hydrocarbons to the production well. The fluid comprises an intimate mixture of colloidal silica and a material which is miscible with the hydrocarbons in the reservoir.

3,759,327

INTERNALLY CATALYZED WELL CONSOLIDATION METHOD

James D. Carnes, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 72,889, Sept. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 840,521, July 9, 1969, abandoned. This application Jan. 7, 1972, Ser. No. 216,223
Int. Cl. E21b *33/138*
U.S. Cl. 166—295 **5 Claims**

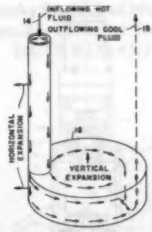
A method is disclosed for permeably consolidating sands in a well wherein a consolidating fluid comprising a hydrocarbon carrier, an acid catalyzed resin or resin-forming material, sand and an acid-producing material are introduced into an incompetent earth formation where acid is produced by the acid-producing material, causing the resin to harden. Specific acid-producing materials are disclosed as catalysts which comprise surfactants which release acid upon heating and ammonium salts which hydrolyze to produce an acid.

3,759,328

LATERALLY EXPANDING OIL SHALE PERMEABILIZATION

Russell C. Ueber; Peter Van Meurs, and Jerke R. Brew, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 57,209, July 22, 1970, abandoned. This application May 11, 1972, Ser. No. 252,448
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 **6 Claims**



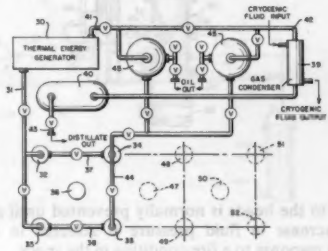
An improved process of permeabilizing and recovering water soluble and/or heat sensitive minerals and hydrocarbons from an oil shale formation containing said minerals by forming a cavern and vertically expanding it by contacting the cavern roof with a hot aqueous fluid while also causing horizontal expansion of the cavern by contacting the oil shale therein with the same or different hot aqueous fluid at a relatively shallow depth and flowing down along a vertical section while dissolving said minerals and rubbling the oil shale and producing from a relatively deep location in the cavern an aqueous liquid containing dissolved minerals therein and subsequently or simultaneously injecting a pyrolyzing fluid into the rubbled oil shale cavern to effect pyrolysis of the oil shale and recovery of hydrocarbons therefrom.

3,759,329

CRYO-THERMAL PROCESS FOR FRACTURING ROCK FORMATIONS

Sigmund L. Ross, Bronx, N.Y., assignor to Oscar Shuffman, Scarsdale, N.Y.

Continuation-in-part of Ser. No. 823,306, May 9, 1969, Pat. No. 3,581,821. This application May 28, 1971, Ser. No. 148,048
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 **10 Claims**



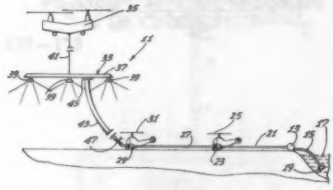
A process for fracturing rock formations is disclosed using cryogenic fluids and exemplified in a process for the secondary recovery of oil wherein the major steps include: establishing a complex of elongated holes arranged in a predetermined geometric pattern which penetrate the oil production formation; injecting pressurized, superheated steam into the holes; fracturing the oil production formation using cryogenic techniques; and recovering the mobilized oil.

3,759,330

FIRE EXTINGUISHING METHOD

Thomas Milton Rainey, 18122 Bluebird Dr., Santa Ana, Calif., and Martin Schwartz, 4555 Sylmar Ave., Sherman Oaks, Calif.

Filed Aug. 7, 1969, Ser. No. 848,248
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **8 Claims**



A method of extinguishing fires comprising providing a source of fire retardant flowable material near ground level and in substantial quantities, and conveying the fire retardant material to an airborne distributor for distributing the flowable material. The distributor is supported by an airborne vehicle and the conduit between the source and the distributor is rapidly set up utilizing aerial conveyance of the conduits.

3,759,331

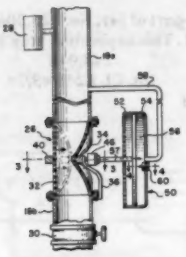
FIRE PROTECTION SYSTEM UTILIZING DRY PIPES NORMALLY MAINTAINED IN A VACUUM

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Apr. 27, 1972, Ser. No. 248,090
Int. Cl. A62c *35/00*
U.S. Cl. 169—17 **9 Claims**

A fire protection system in which a plurality of extinguishant discharge heads are disposed in elevated position in a

space to be protected from fire and are connected by a piping system for supplying extinguishant to the heads. Flow of extin-



guishant to the heads is normally prevented until a predetermined increase in fluid pressure is affected in the piping system in response to a fire condition in the space.

3,759,332

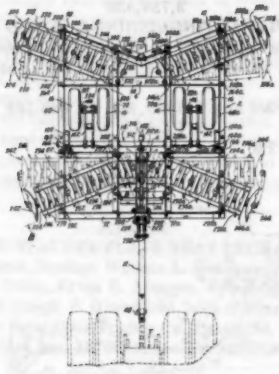
EXTRA HEAVY DUTY MULTI-DISC HARROW WITH AUTOMATIC LEVEL CONTROL

Jackson P. Robertson, Sr., Rt. 1, Box 218, Steens, Miss.

Filed Dec. 9, 1970, Ser. No. 96,562

Int. Cl. A01b *63/11*

U.S. Cl. 172—239 **7 Claims**



Agricultural machine adaptable for use as a multi-disc harrow having a longitudinally rigid, but transversely and diagonally flexible main frame assembled from prefabricated front, rear, left and right frame sections, each of which sections includes longitudinal and transverse components welded together. The front and rear sections are disposed between the left and right sections at the forward and rear ends thereof. The sections are joined together by bolts, instead of being welded to each other, to provide the aforesaid flexibility, while eliminating failure in materials and welded joints which would occur if the frame sections were welded together.

The main frame assembly is supported by a retractable wheel carriage assembly wherein the wheels are adjustable to raise the frame for transport, or to control the depth of operation of the implements carried by the frame. A leveling mechanism is interposed between the carriage assembly and a draw bar connected to the front frame section and automatically functions to maintain the main frame level with the ground at all times.

3,759,333

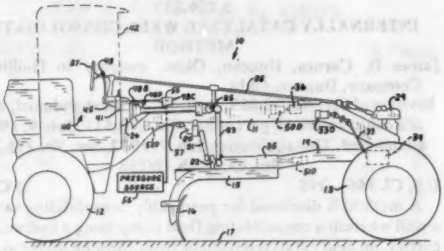
HYDRAULIC CONTROL SYSTEM FOR ROAD GRADERS

Theodore Rivinius, 1322 N. 4th St., Bismarck, N. Dak.

Filed Apr. 12, 1971, Ser. No. 133,291

Int. Cl. E02f *3/12*

U.S. Cl. 172—781 **4 Claims**



A hydraulic control system for road graders wherein normal mechanical control clutches are replaced with control levers which operate hydraulic valves located outside of the operators compartment for the grader, and which in turn control hydraulic motors connected to existing gear boxes and rotary drives for the various grader operation.

3,759,334

IMPACT SOCKET WRENCH TOOL

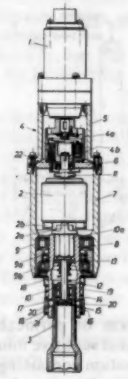
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 3, 1971, Ser. No. 195,278

Claims priority, application Austria, Dec. 17, 1970, A 11350/70

Int. Cl. B25d *15/00*

U.S. Cl. 173—22 **12 Claims**

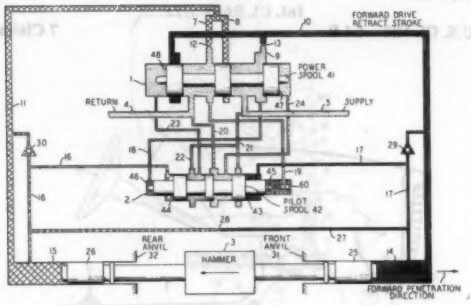


A socket wrench capable of reciprocatory sliding motion in the direction of its axis is rotatable thereabout by a preferably hydraulic driving motor. A vibratory impact device is mounted between the motor and the wrench to impart reciprocatory impacts to the rotating wrench, and a slip clutch between the motor and the impact device prevents vibrations from reaching the motor.

3,759,335
MOLE HAMMER-CYCLE CONTROL

James Christopher Coyne, New Providence, N.J., assignor to Bell Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1971, Ser. No. 214,342
Int. Cl. E21b 3/12
U.S. Cl. 173—91 5 Claims

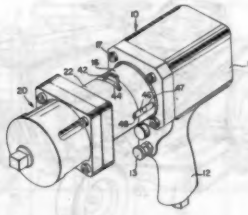


This disclosure describes a scheme for switching the propelling fluid forces alternately to opposite sides of a Mole impacting hammer. The scheme is grounded on valving structures for sensing fluid pressure differences (1) between supply and return pressure and (2) on opposite sides of the hammer; and on orifice means for generating a controlled difference between (1) and (2). By selecting operating parameters in this system, the fluid force switching is always actuated at a point in the retract portion of the cycle so as to assure maximum hammer stroke.

3,759,336
INTERCHANGEABLE POWER OPERATED TOOLS

David Louis Marcovitz, 2022 Valencia St., and Harold Ray Vocker, 109 Kentucky St., both of Monroe, La.

Filed Jan. 21, 1972, Ser. No. 219,682
Int. Cl. B23b 45/14
U.S. Cl. 173—163 2 Claims

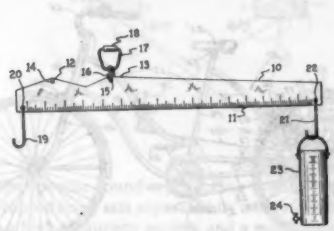


Power operated tools of several types may be detachably connected to a portable power unit by means of complementary coupling members on each tool and a power unit. The coupling members in the form of collars on the power unit and a tool telescope together and the driving shaft of the power unit moves axially into driving engagement with a driven shaft of the tool. A detachable, spring biased fastener provides for quickly changing from one tool mounted on the power unit to a tool of another type.

3,759,337
FISH SCALE

Donald M. Luedke, 2605 Maple Hill Ln., Brookfield, Wis., and Robert J. Tongas, 420 Ravenswood Cir., Waukesha, Wis.

Filed Dec. 4, 1972, Ser. No. 311,753
Int. Cl. G01g 23/14, 1/18
U.S. Cl. 177—172 4 Claims

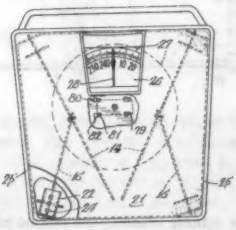


A fish scale having handle means for suspending the beam of the scale with a hook adapted for insertion into either one of two apertures in said beam; a hook depending from one end of the beam for holding a fish to be weighed, a transparent fluid receptacle dependent from the opposite end of the beam, a filling aperture at the top of the receptacle, weight indicia for showing weight at various levels of fluid within the receptacle, and means at the lower end of the receptacle for retaining or releasing portions of said fluid from the receptacle.

3,759,338
DIAL MOUNTING FOR WEIGHING SCALE

Svend A. H. Petersen, and Padraic E. Neary, both of Co. Sligo, Ireland, assignors to Hanson Limited, Sligo, Ireland

Filed June 1, 1972, Ser. No. 258,839
Int. Cl. G01g 21/18
U.S. Cl. 177—173 7 Claims

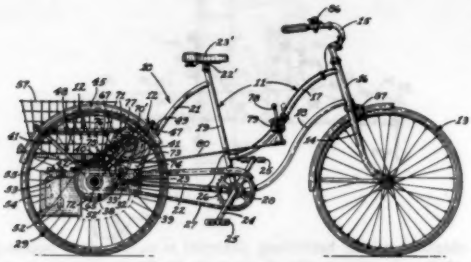


An indicating device for a platform weighing scale including a rotatable shaft having a pinion fixed thereon adapted to engage a reciprocable rack, a dial support plate mounted on the shaft for rotation therewith, a dial mounted on the support plate including weight indicating indicia, interlocking bayonet slots and locking lugs on the dial and support plate for holding the dial on the plate, and a central aperture in the dial for receiving an end portion of the shaft when the dial is locked on the support plate.

3,759,339
DUAL PROPULSION TRICYCLE

Vernon J. Farrow, 143 N. Spencer, Mesa, Ariz.

Filed July 18, 1972, Ser. No. 272,957
Int. Cl. B62k *11/00*
U.S. Cl. 180—27 6 Claims

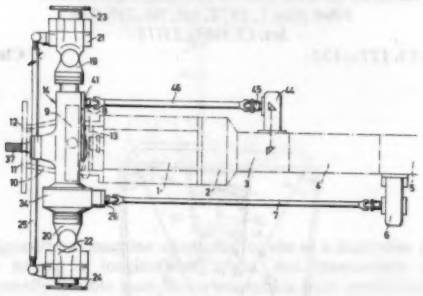


A three-wheeled tricycle which may be manually propelled by the operator or quickly converted to electrical power propulsion by the simple manipulation of suitable controls by the operator.

3,759,340
AUTOMOTIVE VEHICLE WITH FRONT POWER TAKE-OFF FOR POWER-DRIVEN IMPLEMENTS

Thomas Schilter, Stans, Switzerland, assignor to Maschinenfabrik Schilter & Co., Stans, Switzerland

Filed Nov. 30, 1971, Ser. No. 203,333
Claims priority, application Switzerland, Dec. 2, 1970, 17806/70
Int. Cl. B60k *17/28*
U.S. Cl. 180—53 FE 16 Claims

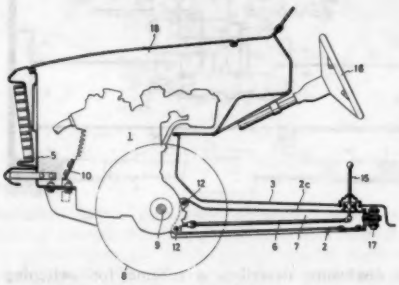


An automotive vehicle wherein the engine block supports a plate for removable power-driven implements and a pivotable front axle whose housing serves as a means for journalling therein the rotary output element of a front power take-off for such implements. The input element of the power take-off receives torque from the output shaft of the engine in response to engagement of a clutch which connects the output shaft with the wheel transmission. The output element can be mounted in two coaxial trunnions of the front axle housing on in parallelism with the trunnions. Such mounting of the output element insures that the latter is invariably located at a predetermined distance from the torque-receiving input member of the implement which is mounted in front of the engine block.

3,759,341
SUPPORT APPARATUS FOR A POWER UNIT IN A MOTOR VEHICLE

Hideo Takeda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 860,670, Sept. 24, 1969, abandoned.
This application Oct. 22, 1971, Ser. No. 191,840
Claims priority, application Japan, Sept. 24, 1968, 43/68870
Int. Cl. B60k *5/12*
U.S. Cl. 180—64 R 7 Claims

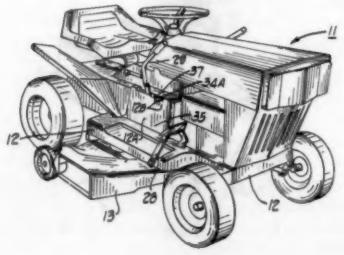


A vehicle power unit constituted by an internal combustion engine and a transmission is supported at one end from the wall of the engine compartment of the vehicle and from the other end by a T-shaped support having a hollow longitudinal arm and transverse arms supported at their free ends from the vehicle floor in the region of side sill members. The hollow longitudinal arm can receive a speed control lever which connects to the power unit.

3,759,342
VARIABLE SPEED DRIVE HAVING SPEED LIMITING MEANS

Gunter F. Plamper, Lakewood, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Feb. 18, 1971, Ser. No. 116,443
Int. Cl. B60k *17/02*
U.S. Cl. 180—70 R 2 Claims



A variable speed drive for a tractor or the like having a pulley-and-belt driving arrangement between engine and driving wheel providing adjustable variation in the speed and adjustable means for limiting the degree of variation in the speed. This is an abstract only of the specific illustration of the invention given by way of example, and is not to be used in the interpretation of the claims nor as a limitation on the scope of the invention.

3,759,343

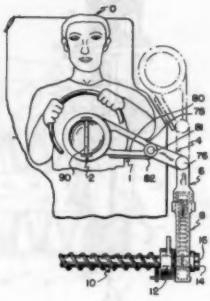
VEHICLE SAFETY DEVICE

James Monaghan, 11849 Clifton Blvd., Apt. 204-A, Lakewood Gardens, Lakewood, Ohio

Continuation-in-part of Ser. No. 163,379, July 16, 1971. This application May 4, 1972, Ser. No. 250,413

Int. Cl. B60n *21/10*

U.S. Cl. 180—91 9 Claims



The disclosure relates to a vehicle occupant restraint device. The device comprises a resilient pad for restraining the occupant, a transversely extending rigid support crossmember for disposing the pad in spaced proximity to the occupant's torso and a horizontal adjustment mechanism which permits adjustment of the horizontal spacing between the occupant's torso and the pad while preserving the disposition of the pad in an attitude parallel to the transverse general plane of the occupant's torso.

The device also may include an automatic operation system for positively restraining an occupant on accident impact. This automatic operation system may include means for facilitating disengagement of the adjustment mechanism during its operation.

3,759,344

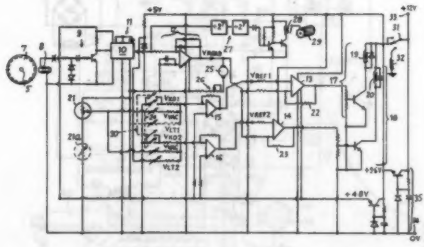
SYSTEMS FOR LAND VEHICLES

Timothy John Blee; Lawrence Edward Hyde, and John Noddings, all of Warwickshire, England, assignors to Associated Engineering Limited, Warwickshire, England

Filed Feb. 25, 1971, Ser. No. 118,609

Int. Cl. G05d *13/62*

U.S. Cl. 180—105 E 3 Claims



The invention relates to a land vehicle, and in particular to an automatic transmission for an automobile or other road vehicle. An electronic system is provided which senses the vehicle road speed and the torque of the vehicle engine, compares electrical signals corresponding to these variables, and controls changes in gear ratios of the transmission in dependence upon this comparison.

3,759,345

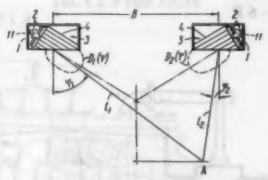
STEREOPHONIC SOUND-REPRODUCING SYSTEM

Andrei Vladimirovich Borisenko, prospekt Metallistov 80, Korpus 3, kv. 384, Leningrad, U.S.S.R.

Filed Dec. 22, 1971, Ser. No. 210,892

Int. Cl. G10k *13/00*; H04r *1/28*

U.S. Cl. 181—31 B 3 Claims



A stereophonic sound-reproducing system comprising two sound-reproducing sets separated by a base distance and each having a high-frequency section and a mid frequency section. The mid frequency section is provided with an acoustic focuser, the acoustic axis of which is so oriented towards the base line as to make the perception of the spatial sound panorama practically independent of the listener's position on a line parallel to the base line.

3,759,346

MULTIPURPOSE DEVICE FOR MOVING PERSONS OR LOADS OVER A HEIGHT DIFFERENCE

Otto Brda, 10 Breitenau, Bad Kohlgrub, Germany

Filed June 28, 1971, Ser. No. 157,591

Claims priority, application Germany, Dec. 31, 1970, P 20 64 761.4

Int. Cl. A62b *1/08*

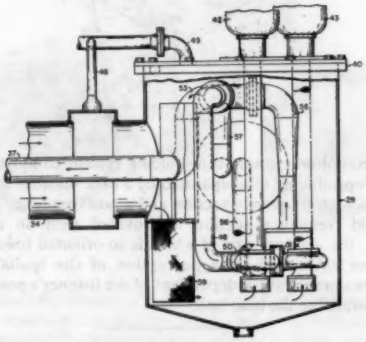
U.S. Cl. 182—7 12 Claims

A device for roping down persons and/or loads from a certain height above the ground, comprising a supporting member, on which a cylinder is supported by a free-wheeling bearing such that the cylinder can be rotated in one direction only and its rotation is blocked in the other direction of rotation. A rope is wound around the periphery of said cylinder at least one and a half times and on one end thereof there are provided means for connecting a load or person, this one end acting on the cylinder in the direction, in which the rotation of the cylinder is blocked. Thus, by gradually releasing the other end of the rope a load or person can be lowered down to the ground and a braking action is effected by friction generated between the rope and the periphery of the cylinder. In a second embodiment, the person to be roped down is connected to the supporting member, one end of the rope is connected to the place, from which the person or load is to be roped down, and the rope is wound around the cylinder at least once.

3,759,347
LUBRICATION SYSTEM

Michael Csanady, Jr., Ridley Park; Joseph Sloan, Media, and Cornelius S. Goldsborough, Jr., Glen-Riddle, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1972, Ser. No. 218,673
Int. Cl. F01m *5/00*
U.S. Cl. 184—6 R **8 Claims**

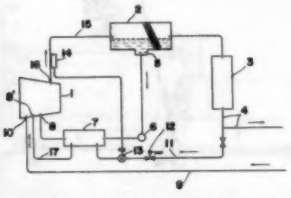


A lubrication system for a machine having bearings rotatably supporting a journal such as a turbo-generator unit. The system comprises an oversized cylindrical pipe, hereinafter defined as the guard pipe, in which the pressurized lubricant conduits are housed. The guard pipe is of sufficient size to contain the needed lubricant for the bearings of the turbo-generator unit and thereby eliminate the reservoir.

3,759,348
METHOD OF COMPRESSING CHLORINE GAS

Keisuke Kasahara, Tokyo, Japan, assignor to Kabushiki Kaisha Maekawa Seisakusho, Tokyo, Japan

Filed Nov. 8, 1971, Ser. No. 196,503
Claims priority, application Japan, Nov. 10, 1971, 46/98905
Int. Cl. F16n *7/32*
U.S. Cl. 184—6.23 **3 Claims**



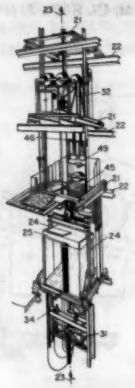
A method of compressing chlorine gas characterized by comprising the step of blowing cooled fluon oil or concentrated sulfuric acid into a screw compressor for lubricating and seal said compressor when chlorine gas is compressed by the screw compressor.

3,759,349
ELEVATOR SYSTEM WITH TEMPORARY HOISTWAY STRUCTURE AND METHOD FOR USE THEREOF

Joseph Edward Sieffert, New Hyde Park, N.Y., assignor to Otis Elevator Company, New York, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,058
Int. Cl. B66b *9/00*
U.S. Cl. 187—2 **9 Claims**

An elevator system in which a temporary hoistway is formed in an open air shaft of a building under construction. The hoistway members, which in turn support the guide rails, are connected to the building members in a manner that, upon forces being exerted on the guide rails, these forces are distributed to several levels of the building. The buffer assembly

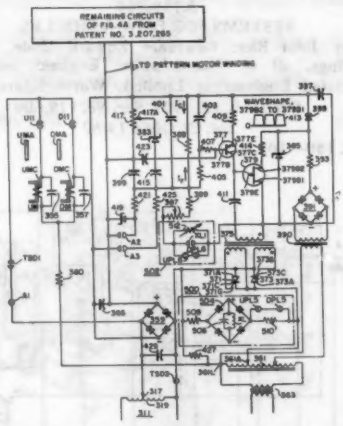


for protection against downward overtravel is connected to the rails and is movable upward as construction progresses. A method of using this arrangement to provide passenger elevator service into unaligned steelwork of a building under construction is also described.

3,759,350
ELEVATOR SYSTEM

William R. Caputo, Wyckoff, and William M. Ostrander, Hackensack, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 30, 1972, Ser. No. 258,114
Int. Cl. B66b *1/30*
U.S. Cl. 187—29 R **11 Claims**

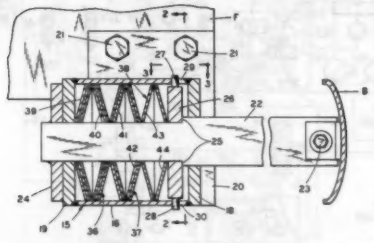


An elevator system which automatically reduces the rate of change of acceleration when an elevator car is requested to decelerate before the car reaches the end of its normal acceleration mode. When a stop request is initiated while the car is still accelerating, a modification circuit changes the normal acceleration schedule to reduce the rate of rise of the speed pattern signal. A delay circuit delays the operation of the modification circuit to insure that the modification circuit does not substantially lengthen the time required for the car to reach the landing at which it is to stop.

3,759,351
FRANGIBLE ENERGY ABSORBING BUMPER MOUNTING DEVICE

Edward B. Purple, Joliet, Ill., assignor to Nash Bros. Co., Joliet, Ill.

Filed July 12, 1971, Ser. No. 161,636
Int. Cl. B60r 19/02; B61g 11/16; F16f 7/12
U.S. Cl. 188—1 C 4 Claims

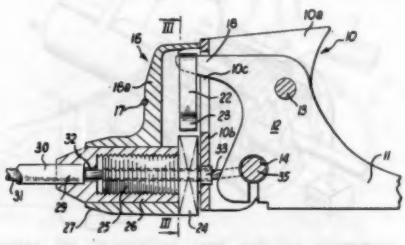


A frangible energy absorbing device particularly suitable for use with automobile bumpers, towing hitches, and the like includes an outer casing having a perimetric side wall and a pair of end plates. An elongated shaft extends slidably through the end plates and carries a thrust plate within the casing which extends generally transversely to the shaft. A plurality of energy absorbing plates such as Belleville washers or longitudinally extending spaced-apart plates are interposed between the thrust plate and the other end plate of the casing. The thrust plate includes a shear pin which extends through an opening in the side wall of the casing and which can withstand forces of normal magnitude applied to the shaft but which shears in the event of impact. When the pin shears, the shaft moves toward the other end plate of the casing to deform the plates, thereby absorbing the energy of impact.

3,759,352
CYCLE BRAKE HAVING BRAKE ADJUSTING MECHANISM

John Geoffrey Toplis, Beeston, Nottinghamshire, England, assignor to Raleigh Industries Limited, Nottingham, England

Filed May 12, 1971, Ser. No. 142,543
Int. Cl. B62l 3/02
U.S. Cl. 188—24 9 Claims

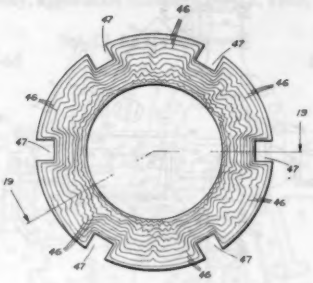


A cycle brake for applying a braking action to the wheel of a cycle through a flexible cable and having an adjustable support for the cable sheath that is automatically movable to compensate for wear of the cycle brake elements upon pivotal movement of a brake lever beyond a predetermined point during a braking action.

3,759,353
DISC BRAKE CONTAINING REINFORCED CARBON BODIES

Glenn R. Marin, Ransomville, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 48,063, June 22, 1970, Pat. No. 3,712,428.
This application Sept. 7, 1971, Ser. No. 178,393
Int. Cl. F16d 55/36
U.S. Cl. 188—71.5 4 Claims

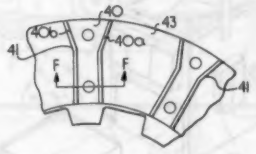


The strength of circumferentially wound carbon-fiber reinforced carbon bodies is vastly improved if the reinforcing fibers are wound loosely, to a width greater than the axial thickness of the desired carbon body, and then axially compressed to cause radial overlapping of the carbon fibers. This technique is particularly useful for carbon bodies having an irregular perimeter, such as brake discs containing keyways or other indentations for bearing circumferential stress, since the reinforcing fibers adjacent to the stress-bearing perimeter can be made to conform substantially to the shape of the perimeter and the indentations therein.

3,759,354
BRAKE DISC STRUCTURE

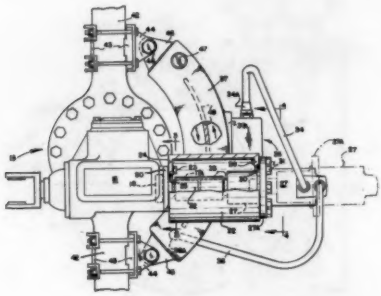
Frederick S. Dowell, and Benedict P. Healy, both of Coventry, Warwickshire, England, assignors to Dunlop Limited, London and Birmingham, England

Filed Mar. 1, 1972, Ser. No. 230,632
Claims priority, application Great Britain, Mar. 2, 1971, 5,738/71
Int. Cl. F16d 65/12
U.S. Cl. 188—218 XL 10 Claims



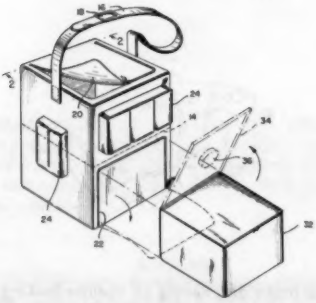
An annular brake disc having an annular braking member on which at least one radially-extending face is furnished with a friction facing which is provided by a series of segmental-shaped friction pads that are secured to the braking member. Each friction pad is constructed of a soft or brittle material such as carbon and has at least one substantially straight edge. In order to transmit braking loads, this edge is chamfered so as to fit into a corresponding inclined undercut abutment face in the member, of which the following is a specification.

3,759,355
MOTION RETARDING SYSTEM FOR TRUCKS
John D. Hale; Frank L. Hale, both of P.O. Box 11, Swisshome, and Samuel J. Hale, Jr., Star Rt. Box 33, Chesire, all of Oreg.
Filed Feb. 7, 1972, Ser. No. 223,891
Int. Cl. F16d 57/00
U.S. Cl. 188—290 2 Claims



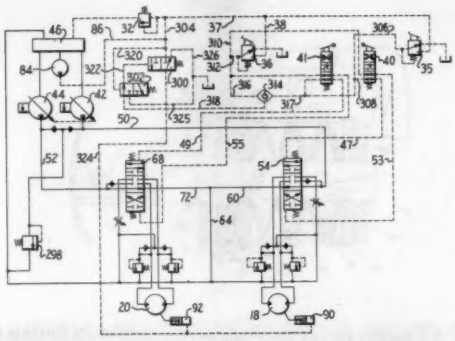
A supplementary braking system for trucks for operation in direct coupled engagement with the vehicles drive shaft. A base, in attachment with a differential of the truck, mounts a hydraulic pump coupled in an axial manner with a truck drive shaft component. The discharge flow from said pump enters a valve housing wherein valve components may selectively regulate fluid flow to load or unload the pump. A reservoir is located adjacent an axle assembly of the truck and receives an airstream flow for cooling purposes.

3,759,356
CARRIER FOR SOILED DIAPERS
John H. Bostick, and Ivory S. Bostick, both of San Francisco, Calif., assignors to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Dec. 16, 1971, Ser. No. 208,574
Int. Cl. A45c 11/00
U.S. Cl. 190—42 3 Claims



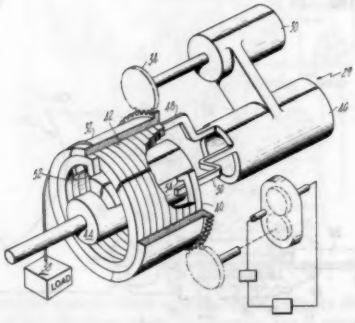
A bag adapted to be carried by a strap and having two main compartments. The first compartment carries food, diapers and the like. The second compartment carries a pail for receiving soiled diapers with a lid carrying a deodorant. The bag can also have a plurality of exteriorly disposed zippered pockets.

3,759,357
BRAKE SAVER CIRCUIT
Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 23, 1972, Ser. No. 237,349
Int. Cl. B60k 29/02
U.S. Cl. 192—3 R 4 Claims



There is disclosed a brake control system in conjunction with drive control system of a vehicle wherein said systems are interconnected for simultaneous release of spring applied brakes upon activation of the drive control circuit, providing control pressure is adequate for full release of the brakes.

3,759,358
BIDIRECTIONAL LOCKING DEVICE
Raymond N. Quenneville, Suffield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Division of Ser. No. 58, Jan. 2, 1970, Pat. No. 3,631,951. This application Oct. 4, 1971, Ser. No. 186,380
Int. Cl. B60t 7/12
U.S. Cl. 192—8 C 5 Claims

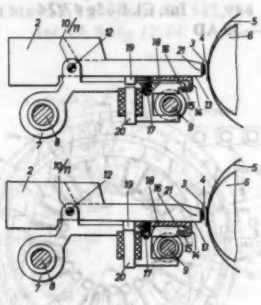


A bidirectional locking device for an output shaft which has a load impressed thereon is provided by a single spring means placed between the output shaft and a fixed member for normally locking the output shaft and preventing its rotation in either direction; drive means are operatively connected to the single spring means for unlocking the spring means and for driving the output shaft.

3,759,359
WIRE MATRIX PRINTER HEADS

Dieter Stellmach, Niederstotzingen, Germany, assignor to Walther Buromaschinen, GmbH, Gerstetten, Germany

Filed Feb. 1, 1972, Ser. No. 222,469
Claims priority, application Germany, Feb. 19, 1971, P 21 08 006.8
Int. Cl. B41j *3/02*
U.S. Cl. 197—1 R 4 Claims



A wire matrix printer head has the recording ends of wires positioned to form a matrix of five vertical columns of seven points each. The head is pivotally mounted on a carriage moveable in the direction of printing and an electromagnet on the carriage attracts an armature plate on the printer head to tilt the printer head downwardly to print certain characters so that the vertical range of printing of the recording ends is extended beyond the seven points of the vertical columns of the matrix.

3,759,360
APPARATUS FOR THE CONTROL OF TYPE PRINTING SEQUENCES

Albert Rix, Wilhelmshaven; Georg Werner, Heidmuhle, and Hans Euchs, Wilhelmshaven, all of Germany, assignors to Olympia Werke A.G., Wilhelmshaven, Germany

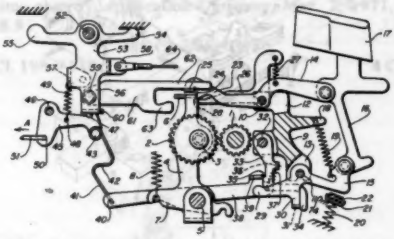
Filed May 26, 1970, Ser. No. 40,514. The portion of the term of this patent subsequent to Feb. 6, 1990, has been disclaimed.
Claims priority, application Germany, May 31, 1969, P 19 27 963.1
Int. Cl. B41j *23/08*
U.S. Cl. 197—17 7 Claims

Apparatus for controlling type printing sequences of manually actuatable, power-driven typwriters and similar machines having type printing mechanisms and key levers, including a plurality of releasably mounted intermediate members, each of which is movable between a rest mode and a release mode and arranged to actuate an associated type printing mechanism when its respective key lever is depressed. Each intermediate member has a spring member biasing it toward a ball block, into which one released member at a time may drop. When an intermediate member is released while another intermediate member is in the ball block, the biasing force of the released intermediate member supplied by its spring member holds it in storage until the ball block is cleared.

3,759,361
CARRIAGE RETURN AND LINE SPACE MECHANISM

Manfred Link, Nuernberg, Germany, assignor to Triumph Werke, Nuernberg, Germany

Filed Nov. 2, 1970, Ser. No. 86,235
Claims priority, application Germany, Nov. 3, 1969, P 19 55 198.5
Int. Cl. B41j *19/68*
U.S. Cl. 197—65 2 Claims

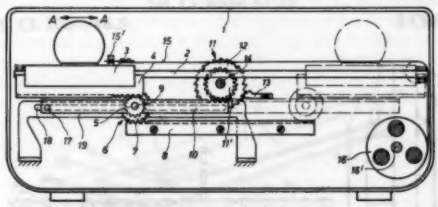


Mechanism to effect line spacing followed by carriage return movement via clutch and drawband in response to carriage return key depression is made conditionable upon carriage return key depression to a second limit to allow line spacing operation only and at any carriage position within set margins.

3,759,362
APPARATUS FOR TRANSPORTING A TYPE SUPPORT CARRIAGE IN TYPEWRITERS OR SIMILAR OFFICE MACHINES

Paul Koch, Wilhelmshaven, Germany, assignor to Olympia Werke A.G., Wilhelmshaven, Germany

Filed Feb. 2, 1972, Ser. No. 222,811
Claims priority, application Germany, Feb. 26, 1971, P 21 09 208.0
Int. Cl. B41j *19/00*
U.S. Cl. 197—82 6 Claims



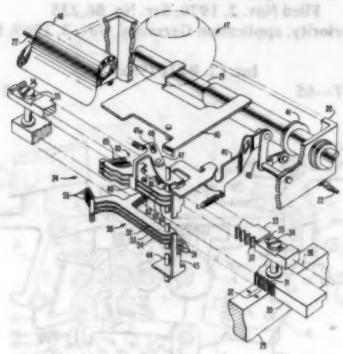
A device for transporting a type support carriage in typewriters or similar office machines including a stepping mechanism which advances the support carriage in steps in the typing direction. The stepping mechanism includes a first toothed rail mounted on the machine frame and displaceable relative thereto. A second toothed rail is provided which is also fastened to the machine frame along with a third toothed rail which is fastened to the support carriage. A sprocket wheel assembly is also provided with the first toothed rail engageable through the sprocket assembly with the third toothed rail in a path translating manner while the sprocket assembly is in engagement with the second toothed rail.

3,759,363

LETTER SPACE CONTROL MECHANISM

William Harold Castle, Winchester; Harry Michael Jacobs, and Lowell Thomas Sloan, both of Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,874
Int. Cl. B41j *19/58*
U.S. Cl. 197—84 R 10 Claims



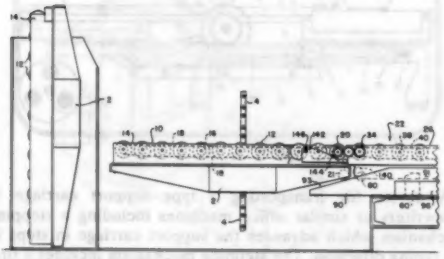
A set of selectively active stop pins cooperate with measured openings in a control plate to limit letter feed motion in either the forward or reverse direction. The measuring plate opening includes two effective portions that are alternately selectable to provide two different measuring calibrations. A preferred alternate calibration is known in the art as "EXPAND" where all measurements are increased by a fixed amount. Fixed increment spacing is obtained by suppressing the measuring pin selection through an override device, thereby allowing control to be accomplished by a normally active measuring pin in cooperation with the measuring plate. By providing all measuring mode control at the measuring plate, it becomes unnecessary to modify the space control information generated in the typewriter keyboard.

3,759,364

LOADING CONVEYOR FOR ELEVATOR

Andrew T. Kornylak, 400 Heaton St., Hamilton, Ohio

Filed Aug. 15, 1968, Ser. No. 752,912
Int. Cl. B65g *17/34*
U.S. Cl. 198—20 5 Claims



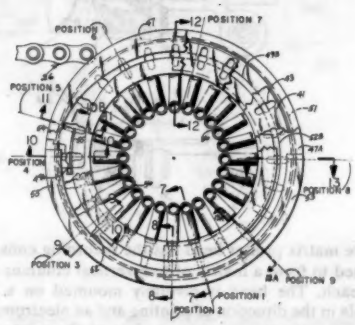
A device for transferring a pallet load between a horizontal and vertical conveyor or elevator which can compensate for large differences in alignment between the load supporting surfaces of the conveyors and which supports the trays of the vertical conveyor during the transfer of the load. A pair of wedges associated with the horizontal conveyor are shifted under the tray after the vertical conveyor is stopped at a transfer station to support the tray during transfer of the load. The horizontal conveyor is supported by the wedges as it is moved into transfer contact with the trays.

3,759,365

FEEDING AND RECTIFYING APPARATUS AND METHOD

Theodore F. Aronson, Glen Cove, N.Y., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 26, 1969, Ser. No. 836,872
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AD 22 Claims



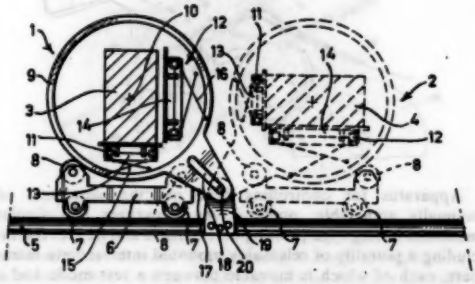
This disclosure is directed to a feeding and rectifying method and apparatus for orienting articles of manufacture in a predetermined manner onto a moving conveyor means. The feeding and rectifying apparatus comprises essentially a system of maintaining a supply of articles in a hopper through which the articles are ramdomly discharged. The dispensing of the articles from the hopper is attained by effecting relative rotation between the discharge means and the hopper, and orientation or rectification of the articles thus removed is effected by cooperating camming means and gauging means mounted for relative rotation with respect to one another operating on the article.

3,759,366

DEVICE FOR CUTTING INTO SLABS A BLOCK OF NOT YET ENTIRELY SOLIDIFIED CELLULAR CONCRETE OR ANOTHER PLASTIC MATERIAL

Johannes Antonius Marie Adank, Vinkeveen, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed Feb. 24, 1972, Ser. No. 229,026
Int. Cl. B65g *47/22*
U.S. Cl. 198—33 AD 2 Claims



A device for cutting slabs from a block of a weak material, such as not yet entirely solidified cellular concrete, comprising

a revolvable cage into which the block lying upon a trolley is introduced; the cage is than rolled sidewardly and turned over 90° such that the block is resting upon a second trolley locked in the cage after which one or more cutting wires are passed through the block; finally the second trolley with the slabs is discharged and the cage is turned back 90°, so as to repeat the cycle.

3,759,367

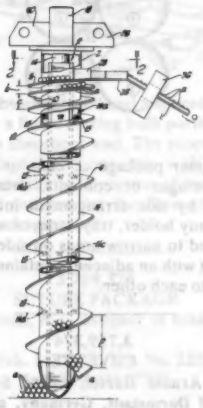
MAGNETIC ARTICLE SORTING APPARATUS

Eldon G. Elliott, 32428 Maryland, Livonia, Mich.

Filed May 13, 1971, Ser. No. 142,954

Int. Cl. B65g *17/46*

U.S. Cl. 198—41 **18 Claims**



Apparatus for handling articles by magnetic attraction including an elongated hollow casing of nonmagnetic material, an elongated magnetic core assembly rotatably received in said casing, and a ramp of nonmagnetic material wound spirally around the casing for causing articles attracted by the magnetic core assembly to advance along the length of the casing and upon rotation of the core assembly relative to the casing.

3,759,368

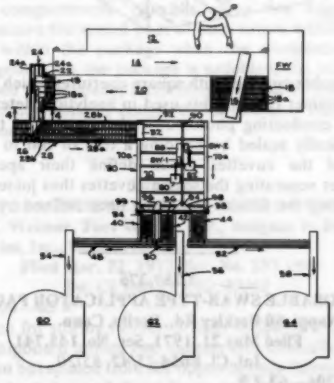
EGG PROCESSING APPARATUS

Boyd W. Rose, and George W. Thornton, both of Riverside, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Mar. 13, 1972, Ser. No. 234,001

Int. Cl. B65g *37/00*

U.S. Cl. 198—76 **8 Claims**



Egg processing apparatus wherein eggs are conveyed from an egg loading station through a washer apparatus to and through an egg accumulation device to a plurality of egg processing machines, such as egg breaking machines, which are each subject to temporary interruption of their operation from time to time. The apparatus includes means for regulating the accumulation of eggs by the accumulation device and means for controlling the movement of the conveyor that conveys the eggs to the accumulation device so that eggs may be delivered to any operative egg processing machine during such times one or more of the other egg processing machines is inoperative.

3,759,369

TRAVELING GRATE

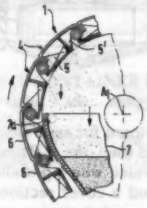
Antonius Vering, Vorhelm; Alois Kluger, Neubeckum, and Karl Eiring, Oelde, all of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Feb. 11, 1972, Ser. No. 225,587

Claims priority, application Germany, Mar. 2, 1971, P 21 09 948.9

Int. Cl. B65g *17/16*

U.S. Cl. 198—140 **4 Claims**



A plurality of hingedly connected members, each including a support plate for providing a substantially continuous transport surface in the upper section of the grate to support material conveyed by the grate, have pocket-like recesses on their inner sides. Each support plate in the vicinity of its front and rear ends is hingedly connected with the adjacent support plates so that the support plates form a substantially continuous peripheral surface throughout the extent of the grate.

3,759,370

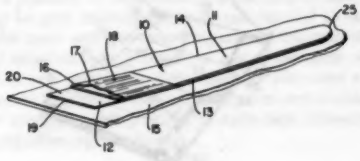
DISPOSABLE PROBE COVER AND METHOD FOR MAKING SAME

Robert A. Blatz, Clayton, Calif., assignor to Handgards, Inc., Pittsburg, Calif.

Filed Apr. 7, 1971, Ser. No. 131,949

Int. Cl. B65d *85/20*

U.S. Cl. 206—16.5 **2 Claims**



A disposable probe cover, comprising a flat bottom plastic sheet shaped generally like a probe and a flat upper plastic sheet overlying the bottom sheet and welded to it at its edges, except for an entrance opening at one end through which the probe is to be inserted. The upper plastic sheet stops short of the bottom plastic sheet at the entrance opening, and it is knurled at the entrance opening to help to provide an entrance guideway. A probe can make its initial contact along the guideway provided by the lower sheet beyond the entrance

opening and when moved into the opening, the knurls provide gaps where the two sheets cannot stick together. Each probe cover may have its bottom sheet removably adhered to a paper backing, from which it is separated when the probe is inserted in the cover and is pulled away from the paper backing. In the method of making the probe cover, knurled rolls are used on one or two side edges of a continuous sheet which is to form many upper sheets of probe covers, and an entire knurled strip is provided before the two sheets and the paper backing are brought together. Then, after cutting, the probe covers result with the knurled portion of the upper sheet adjacent to the entrance opening.

3,759,371

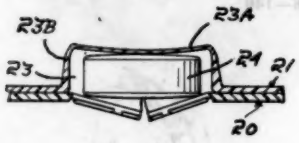
CONTAINERS FOR SMALL ARTICLES SUCH AS PILLS

Robert G. Marks, 256 East St., Walpole, Mass.

Filed July 12, 1972, Ser. No. 271,191

Int. Cl. B65d *83/04*

U.S. Cl. 206—42 **12 Claims**



Containers are disclosed for such small articles as pills that are to be removed and used one at a time. Each container has a bottom section provided with a plurality of article-receiving collapsible pockets and a cover section to overlie and close the pockets with its pocket-closing portion provided with score lines rupturable when an article is forced against it when a pocket is collapsed by digital pressure applied to the bottom thereof. The sections have portions that are interengageable to provide locks to hold them together so that the pockets and pocket-closing portion become pods and also prevent adjacent pockets from opening when a pod is ruptured.

3,759,372

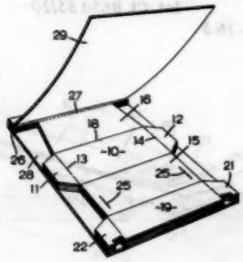
GLUELESS ENVELOPE BLANK AND PAD THEREOF

Frank Venema, 479 Graycourt Drive, Ancaster, Ontario, Canada

Filed Apr. 6, 1971, Ser. No. 131,751

Int. Cl. B65d *82/08, 27/22*

U.S. Cl. 206—57 R **5 Claims**



A glueless envelope blank comprises a main body panel with side flaps along two opposite edges and two subsidiary panels along two other opposite edges; one of the subsidiary panels has slits therein for co-operation with mechanical interlocking means on another panel joined to one of the subsidiary panels. A pad of such envelope blanks can be formed by providing each blank with a readily separable attachment panel, the attachment panels of a pad of the blanks being fastened to one another and to a backing and facing sheet.

3,759,373

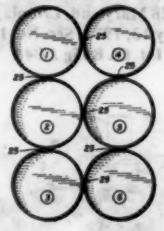
MULTI-CONTAINER PACKAGE

Elmer D. Werth, Arvada; Nelson E. Sipe, Denver, and Clarence J. Carlson, Lakewood, all of Colo., assignors to Adolph Coors Company, Golden City, Colo.

Filed Nov. 12, 1971, Ser. No. 198,148

Int. Cl. B65d *21/02, 85/62*

U.S. Cl. 206—65 C **4 Claims**



A multi-container package of cans or bottles containing beer, other beverages or contents, detachably connected together in side by side arrangement into a self-contained package free of any holder, tray, strap or wrapping. Adhesive material is applied to narrow areas on side surfaces of a container for contact with an adjacent container whereby they adhere detachably to each other.

3,759,374

CUVETTE

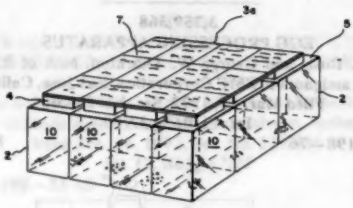
Roland Helger; Arnold Hartel; Alfred Stein, and Wilhelm Baumer, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschankter Haftung, Darmstadt, Germany

Filed June 30, 1970, Ser. No. 51,048

Claims priority, application Germany, July 3, 1969, P 19 33 689.1

Int. Cl. B65d *85/62*

U.S. Cl. 206—65 R **9 Claims**



Disposable cuvettes with square apertures which serve both as a container for reagents used in analytical determinations and for conducting photometric determinations therein are economically sealed by bonding a film or foil to the upper edges of the cuvettes which define their aperture and thereafter separating the sealed cuvettes thus joined together by severing the film or foil along lines defined by their side walls.

3,759,375

DISPOSABLE SWAB-TYPE APPLICATOR PACKAGE

John J. Nappi, 80 Beckley Rd., Berlin, Conn.

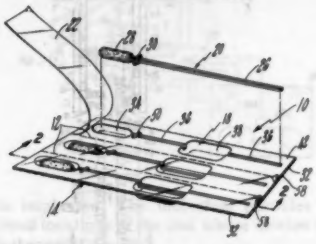
Filed May 21, 1971, Ser. No. 145,741

Int. Cl. B65d *75/42, 85/20*

U.S. Cl. 206—63.2 R **8 Claims**

A disposable swab-type applicator package comprises a strip of one or more packaging units each having an applica-

tor, a tray with a generally flat top surface and a shallow applicator-receiving recess extending downwardly from the top surface in a contoured configuration for accommodating the applicator and a stripable cover for the tray secured to the top surface for enclosably sealing the recess and preventing contamination of the applicator stored therein. The applicator is



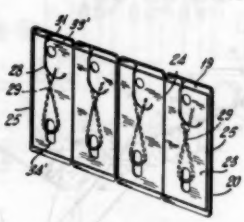
provided with an absorbent wad and a spaced sealing ring and the recess includes a liquid storing bulb portion accommodating the applicator's absorbent wad. The recess also provides a sealing surface adapted to cooperate with the applicator's sealing ring to isolate the bulb portion of the recess from the remainder thereof and restrict the flow of liquid into the remainder of the packaging unit.

3,759,376

SUTURE PACKAGE

Borys Lisowski, Union, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Feb. 14, 1972, Ser. No. 225,814
Int. Cl. A61l *17/02*
U.S. Cl. 206—63.3 **4 Claims**



A surgical suture package, primarily for double armed multi-strand sutures, retains each individual suture in a predetermined sinusoidal configuration within adjacent but separate compartments. Notches along one edge of the package secure the armed ends of each suture which are held in place within the package when the compartments are folded together. As the package is unfolded, the armed ends are exposed sequentially, facilitating removal by the surgeon of each suture from its compartment one at a time without tangling and kinking.

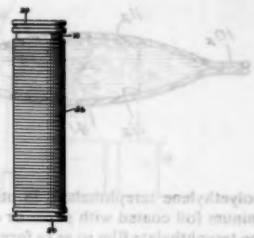
3,759,377

STORAGE DEVICE FOR RUBBER O-RINGS

Robert R. Weimer, Fort Wayne, Ind., assignor to Paramount Industries, Inc., Ft. Wayne, Ind.

Filed Mar. 22, 1972, Ser. No. 237,155
Int. Cl. B65d *85/02, 85/62*
U.S. Cl. 206—65 R **6 Claims**

A device for storing rubber O-rings including a cylindrical tube of chipboard having two annular ribs coaxially disposed adjacent to but spaced from the opposite ends thereof, respectively, each rib being defined by an annular embossment on the interior of the tube and an annular indentation in concentric relation thereto on the exterior. Two ring-like chipboard retainers are removably affixed coaxially to the opposite ends, respectively, of the tube, the retainers being frictionally engaged with the ribs and having radially outwardly extending shoulders which define planes normal to the axis of the tube,



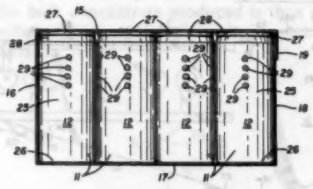
whereby rubber O-rings may engage such shoulders and thereby be retained on the tube. In the event such O-rings have flat radial sides, the endmost O-rings on the tube will have a flush engagement with the respective shoulders thereby mimimizing the possibility of deformation of the O-rings.

3,759,378

MULTI-UNIT CONTAINER PACKAGE

Elmer D. Werth, Arvada, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed May 5, 1972, Ser. No. 250,528
Int. Cl. B65d *5/02, 5/54, 71/00, 85/62*
U.S. Cl. 206—65 C **6 Claims**



A multi-unit container package comprising in combination an outer one piece sleeve-form open end wrapper and a plurality of container units therein each consisting of a plurality of containers detachably bonded together by adhesive means applied to each container on a side wall contacting a side wall of another container, each unit being free of any holder, strap, tray or space consuming means, said outer wrapper having a flat top overlying in direct contact the tops of the containers, a flat bottom supporting in direct contact the bottoms of the containers, opposite side walls directly contacting the side walls of a plurality of containers in a plurality of units, and a tear strip located midway between and parallel to the open ends of the outer wrapper extending around the outer wrapper said tear strip having a pull tab cut out of the outer wrapper material at one end of the strip, whereby the outer wrapper and contents may be divided into two parts each consisting of an outer wrapper and a plurality of units each consisting of a plurality of adhering containers.

3,759,379

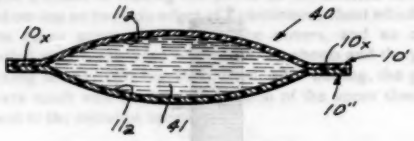
FLEXIBLE HALOGEN PACKAGE

Leroy E. Wrede, Lombard, Ill., assignor to Packaging Laminators, Inc., Bensenville, Ill.

Continuation-in-part of Ser. No. 36,142, May 11, 1970, abandoned. This application Feb. 24, 1972, Ser. No. 229,010
Int. Cl. B65d *81/00*
U.S. Cl. 206—84 **10 Claims**

A flexible package of halogen solutions, such as alcohol or water based tinctures of iodine. In certain embodiments, the

package is formed of a laminate comprising an inner layer of cast polyvinylchloride, a layer of adhesive, a layer of vinylidene chloride copolymer on the adhesive and an outer layer



of polyethylene terephthalate. In other embodiments, a thin aluminum foil coated with paper or cellophane is adhered on to the terephthalate film so as to form the outer layer of such a laminate.

3,759,380

GRAIN SEPARATING MECHANISM FOR COMBINES OR THE LIKE

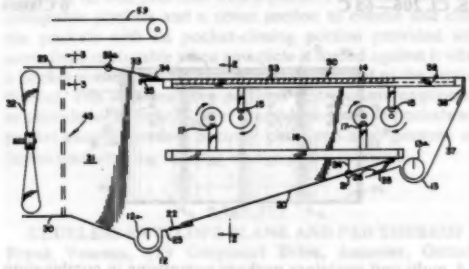
Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.

Continuation-in-part of Ser. No. 818,295, April 22, 1969, Pat. No. 3,606,026. This application Apr. 9, 1971, Ser. No. 132,727

Claims priority, application Canada, Apr. 15, 1970, 80207

Int. Cl. B07b 9/00

U.S. Cl. 209—22 **10 Claims**



The separating mechanism comprises an upper sieve and a lower sieve located one above the other and supported by cranks journaled in the side walls of the casing of a combine. The cranks for the upper and lower sieves are offset from each other 180°. The cranks are driven at speed which is substantially synchronous with the gravitational movement of the threshing mix as it is being tossed. A fan located in front of the two sieves causes an air blast to blow upwardly through the upper sieve. Threshing mix deposited on the upper sieve will be tossed by the circular vibratory motion and the air blast separates the chaff from the grains during the tossing action and the grains drop through the upper sieve. A shutter regulates the air blast. Several sieve types are shown, two of which have transverse ribs.

3,759,381

SORTING APPARATUS

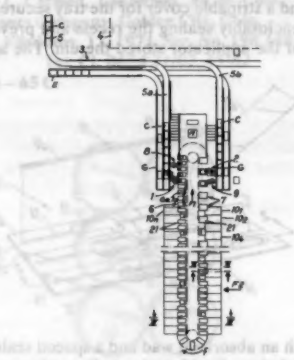
Clarke Mercadie, Eragny, and Pierre Taussac, La Celle St. Cloud, both of France, assignors to Societe Anonyme dite: Systems et Procedes Industriels Modernes, St.-Germain-en-Laye, France

Filed Apr. 26, 1972, Ser. No. 247,663

Int. Cl. B07c 7/00

U.S. Cl. 209—73 **16 Claims**

A sorting apparatus having two superposed conveyors with each of which are associated a loading station, an indexing station and a plurality of receiving stations, each conveyor having a plurality of receptacles and a control memory being provided to initiate unloading of a carrier at the receiving station with which the carrier has been associated at the moment of indexing.



3,759,382

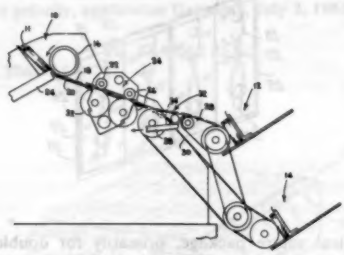
METHOD, APPARATUS AND SYSTEM FOR FITNESS SORTING AND COUNT VERIFYING STRAPS OF CURRENCY

James A. Walkley, Bridgeport; Peter N. Piotroski, Stamford, and George W. O'Gara, Danbury, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 16, 1971, Ser. No. 181,164

Int. Cl. B07c 5/342

U.S. Cl. 209—111.7 **12 Claims**



Currency is sorted according to fitness by monitoring the transparency of a predetermined, limited area of each bill to blue light while in transit through a monitoring station. A photosensor, responsive to the transmittance of blue light through each bill, controls the position of a gate to route fit and unfit bills into separate hoppers. Counters are provided to maintain counts of the fit and unfit bills, as well as to verify the strap count of straps of currency being sorted.

3,759,383

APPARATUS FOR MAKING ABRASIVE ARTICLES

Kiyoshi Inoue, No. 16-8, 3-chome, Kamiyoga, Setagayaku, Tokyo, Japan

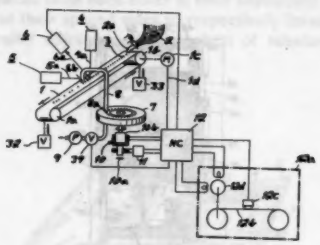
Filed Aug. 2, 1971, Ser. No. 168,092

Int. Cl. B07c 5/342

U.S. Cl. 209—111.5 **9 Claims**

An apparatus for making abrasive articles, e.g., wheels, disks and the like abrasive particles wherein a train of the particles is displaced along a transport path and means is provided for automatically detecting the crystallographic orientation of the individual particles. Particles of appropriate orien-

tation are withdrawn from the transport path and carried with fixed orientation to the wheel, disk or other substrate into



which it is implanted. The individual particles are set in predetermined locations of the disk whose motion is governed by numerical control means.

3,759,384

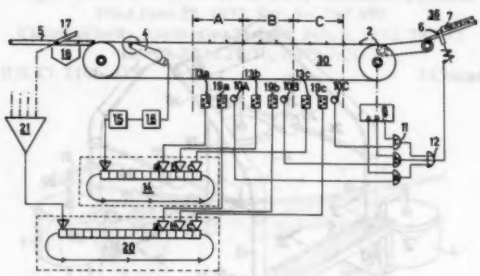
APPARATUS FOR GRADING LUMBER

Bo F. Holmberg, Box 20, Hammar; Nils E. Hellstrom, Strandvager 21, and Sigurd K. J. Modin, Sveavagen 7, all of Nyland, Sweden

Filed Sept. 1, 1971, Ser. No. 177,016

Int. Cl. B07c *1/18*

U.S. Cl. 209—122 **5 Claims**



A high capacity lumber grading apparatus in which transverse conveyor means transport lumber pieces to be graded one by one past a grader and in which means lift each lumber piece to be graded in an arcuate path in front of the grader and simultaneously turn the piece to present the longitudinal sides and edges thereof to the grader.

3,759,385

METHOD AND APPARATUS FOR SEPARATING MIXTURES OF FINE GRAIN MATERIALS

Emile R. J. Pouillon, Bruxelles, Belgium, assignor to Societe Anonyme Cribla, Brussel, Belgium

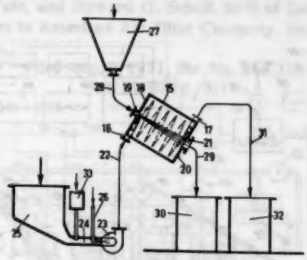
No Drawing. Filed June 17, 1970, Ser. No. 46,931

Claims priority, application Netherlands, June 18, 1969, 6909273

Int. Cl. B03d *1/14*

U.S. Cl. 209—165 **1 Claim**

Installation for separating a mixture of particles of two different materials, one of which materials has an affinity for a gas into fractions in which with a cylindrical tank in one wall having a centrally positioned inlet stub for a mixture of the materials for separation, in the other end wall of the tank a centrally disposed outlet for part of the liquid together with one fraction of the mixture, a tangential liquid inlet stub near the central inlet stub and a tangential outlet stub near the other end wall thereof, said outlet stub adapted for discharg-



ing the part of the liquid together with the other fraction of the mixture and there being means for commingling the gas with the liquid introduced.

3,759,386

METHODS FOR FLOTATION OF ORES

Vyacheslav Alexandrovich Konev, Gavanskaya ulitsa, 16, kv. 6, and Vladimir Ilich Ryaboi, Kostromskoi prospekt, 39, kv. 2, both of Leningrad, U.S.S.R.

Filed Oct. 23, 1970, Ser. No. 83,647

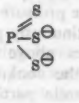
Claims priority, application U.S.S.R., Oct. 23, 1969, 1370210

Int. Cl. B03d *1/02*

U.S. Cl. 209—167 **2 Claims**

A method for flotation of non-ferrous ores which includes flotation of said ore with separation of a bulk concentrate and tailings. The bulk concentrate produced is then conditioned with a desorbate agent containing a substance with the general chemical formula

wherein X is the second radical



or sulphur. After this the bulk concentrate conditioned with said agent is subjected to selective flotation. Prior to selective flotation it is expedient to add a reagent reducing the pH of the pulp.

3,759,387

WATER CONDITIONING SYSTEM

Frank J. Drayton, Jr., Farmington, Mich., assignor to Vulcan Laboratories Inc., Pontiac, Mich.

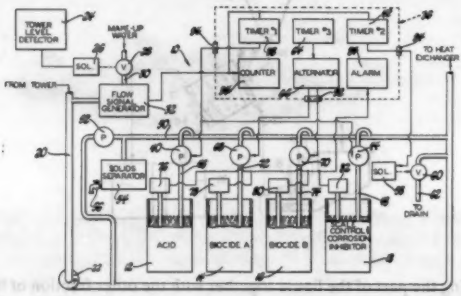
Filed Feb. 23, 1971, Ser. No. 118,002

Int. Cl. B01d *21/00*

U.S. Cl. 210—98 **8 Claims**

A control system for regulating the introduction of various additives into a recirculating water system including a main control cabinet carrying a flow counter for makeup water and timers for controlling additive pumps to add corrosion inhibitor, alkalinity control agents, or other additives after a predetermined quantity of makeup water has been added to the system. The main control unit further includes a clock and

a bistable control device for alternately introducing distinct biocides from first and second supplies to the recirculating water. Level detectors and alarm devices are provided for the



additive supply containers. The control system further provides a timer for controlling the operation of a bleed-off solenoid valve to control the dissolved solids level in the recirculating water system.

3,759,388

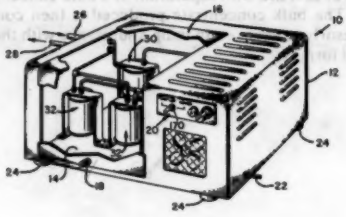
FILTERING SYSTEM FOR DEEP FAT COOKING VESSEL

Gary Thomason, 13530 S.W. Aragon St., Beaverton, Oreg.

Filed Sept. 8, 1971, Ser. No. 178,736

Int. Cl. B01d *29/24*

U.S. Cl. 210—167 **10 Claims**



A filtering system for deep fat fryers includes first and second stage filters and a low pressure pump having a bypass device for restricting the pressure to a given maximum value. Hot cooking oil is continuously passed through a first stage filter, wherein particles above 100 microns in size are removed, after which the cooking oil is passed through a second stage filter wherein particles above seven one-hundredths of a micron in size are removed. The media in the second stage filter comprises thin, fibrous paper material presenting interlocking fibers between layers in a multilayer roll, with the hot cooking oil being pumped axially through such roll.

3,759,389

FILTER ASSEMBLY FOR SWIMMING POOLS

Marcel Valois, and Kenneth Valois, both of Laval Sur Le Lac, Quebec, Canada, assignors to Valmar Swimming Pools Ltd., Quebec, Canada

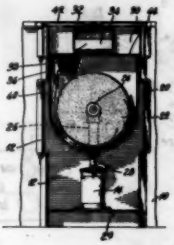
Filed Apr. 13, 1971, Ser. No. 133,630

Claims priority, application Canada, Apr. 8, 1971, 110,047

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **6 Claims**

A filter assembly for swimming pool made of wall segments assembled edge to edge to form the wall of the pool. The filter assembly comprises a casing integral with one of the wall segments and located on the outside wall of the segment, a filter chamber in the casing and communicating with the pool interior adjacent the surface of the water in the pool, a filter located in the filter chamber, and a pump located in the casing outside the filter chamber and communicating with the filter



and with the pool interior adjacent the bottom thereof for recirculating the water in the pool from the top of the pool through the filter and towards the bottom of the pool.

3,759,390

THE REMOVAL OF SURFACE LAYERS FROM LIQUIDS

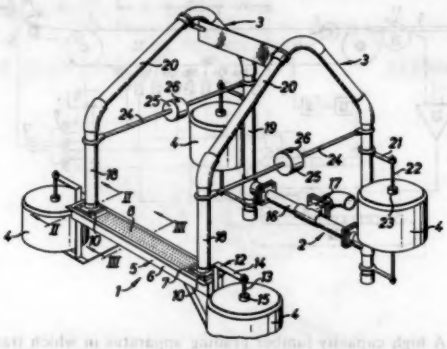
Frederick Walter McCombie, London, England, assignor to Megator Pumps and Compressors Limited, London, England

Filed Feb. 10, 1971, Ser. No. 114,157

Claims priority, application Great Britain, Mar. 5, 1970, 10,540/70; Aug. 26, 1970, 41,089/70

Int. Cl. E02b *15/04*

U.S. Cl. 210—242 **3 Claims**



A device for pumping away floating oil slicks comprises a floating inlet chamber. Oil is drawn through an upper wall of the chamber and is pumped upwardly from the lower part of the chamber. Two embodiments are described one of which includes an outlet part connected to the chamber by parts which can straddle a boom confining the oil and the other of which includes a circular chamber supported by a long dependent pipe.

3,759,391

COILED FILTER ELEMENT AND METHOD OF MANUFACTURING THE SAME

Adolf Dreher, Unterhausen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 74,605, Sept. 23, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,997

Claims priority, application Germany, Sept. 26, 1969, P 19 48 704.8

Int. Cl. B01d *27/06*

U.S. Cl. 210—494 **10 Claims**

An elongated strip of filter material is wound into a coil and consists of two superimposed strip portions connected to each

other at their one side and spaced from each other at their opposite side. The strip portions, in consecutive windings of the strip, are spaced from each other at their connected sides and connected at their spaced sides to respectively form first and second parallel adjoining filter pockets of substantially V-

shaped cross section, open at the opposite end faces of the coil. Transverse corrugations are provided in the strip portions and afford adjustments in the length of the respective strip portions to the extent such adjustments are necessary during the convoluting of the strip portions into coil shape.

3,759,392

PRESSURE STRAINING DEVICE

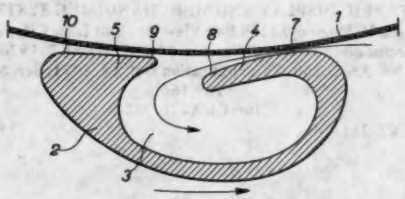
Ahti Syrjanen, Valkeakoski, Finland, assignor to Yhtyneet Paperitehtaat Osakeyhtio Jylhavaara, Valkeakoski, Finland

Filed June 29, 1972, Ser. No. 267,495

Claims priority, application Finland, Feb. 3, 1972, 295/72

Int. Cl. B01d *29/38;* **B07b** *1/20*

U.S. Cl. 210—415 **2 Claims**



The object of the present invention is a pressure straining device for cellulose, paper or equivalent pulp suspension, comprising at least one straining cyliner through which the acceptable pulp is strained and in connection with which there has been provided at least one blade rotating about the axis of the straining cylinder, extending over the straining surface and moving at a small distance from this surface, which blade cleans the surface of the straining cylinder facing the pulp to be strained, and which blade has a substantially drop-shaped crossed section and contains a hollow space, extending from one end to the other, for collecting pulp to be rejected, this hollow space opening through a slit towards the straining cylinder so that on either side of the slit flanges substantially pointing towards each other are produced, and said hollow space communicating at one end with a venting space, located at one end of the pressure straining device, for the pulp to be rejected. The blade has been shaped so that on its side toward the straining cylinder it substantially follows the shape of the straining cylinder, that the leading flange of the blade has been given such a direction that its forward edge is closer to the straining surface than its free rear edge and that the free forward edge of the trailing flange is located closer to the straining surface than the free rear edge of the leading flange.

3,759,393

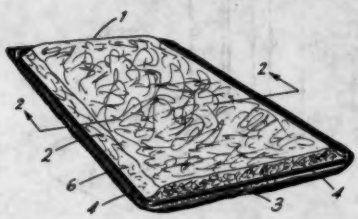
FLUID TREATING FILTER

John E. Tate, and Howard O. Scholl, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Aug. 5, 1971, Ser. No. 169,318

Int. Cl. B01d *46/10*

U.S. Cl. 210—491 **4 Claims**



An improved air filter including an expanded filamentous mat and a support frame in communication therewith extending along the perimeter of the mat, the expanded filamentous mat including a plurality of thickness wherein the filament density varies from thickness to thickness.

3,759,394

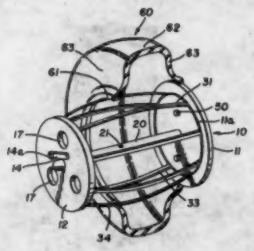
TIRE SUPPORTING DEVICE

Dwight E. Hottle, 2866 Lakeland Pky., Stow, Ohio

Filed Jan. 31, 1972, Ser. No. 222,092

Int. Cl. A47f *7/04*

U.S. Cl. 211—23 **5 Claims**



A collapsible tire supporting device to be used for the transportation and/or storage of pneumatic tires principally of the radial ply type. The device includes a pair of opposed end pieces and a cross bar, one end which is secured to one end piece with the other end piece being slidably received thereon. The end pieces are interconnected by a plurality of deformable resilient support members so that upon moving the slidable end piece toward the fixed end piece, the support members will be deformed so as to provide a support for the uncured or "green" tire in the area of the tread and sidewall. Means are provided for limiting the movement of the slidable end piece and also for locking it in its collapsed and deformed position.

3,759,395

STAND FOR SUPPORTING PHONOGRAPH RECORDS

Sven-Erik Juhlin, Gustavsberg, Sweden, assignor to Aktiebolaget Gustavsbergs Fabriker, Gustavsberg, Sweden

Filed Sept. 1, 1971, Ser. No. 177,035

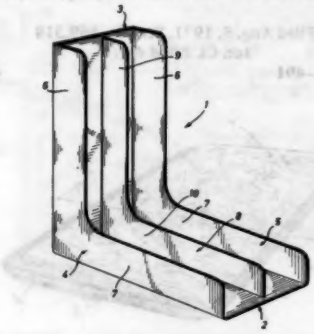
Claims priority, application Germany, Feb. 3, 1971, G 71 03 919.5

Int. Cl. A47b *81/06*

U.S. Cl. 211—40 **1 Claim**

A stand for supporting photograph records in their jackets in a vertical or near vertical orientation, said stand comprising

a one piece body made of a synthetic plastics material and having a rectangular base, a back wall, and two L-shaped side



walls projecting from the base and the back wall. Preferably, at least one L-shaped separation wall projects from the base and the back wall between the two side walls.

3,759,396

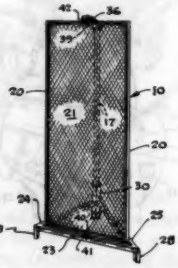
DISPLAY STAND

Leon H. Best, Galva, and Robert D. Davis, Kewanee, both of Ill., assignors to John H. Best & Sons, Inc., Galva, Ill.

Filed Jan. 19, 1972, Ser. No. 218,960

Int. Cl. A47f 5/12, 7/16

U.S. Cl. 211—47 **3 Claims**



A display stand for rug samples or the like comprises a rotating wing having the lower end pivotally mounted on a base and the upper end pivotally mounted in one end of a horizontal arm. The arm is supported by an upright post, and the lower end of the post is somewhat loosely mounted in a tubular socket member which itself is part of a three-sided base support.

3,759,397

DEVICE FOR SUPPORTING SHEET MATERIALS

Raymond De Voghel, Marcinelle, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

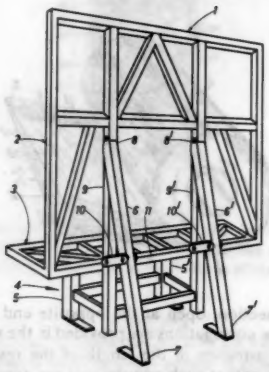
Filed Feb. 19, 1971, Ser. No. 116,827

Claims priority, application Great Britain, Feb. 19, 1970, 8,074/70

Int. Cl. A47f 5/10, 7/00

U.S. Cl. 211—50 **10 Claims**

A supporting device for a load of sheets comprises an L-shaped structure having a wall upstanding from the rear portion of a supporting surface and supported by front and rear leg means. The rear leg means comprises a rear leg member pivotally mounted on the device to pivot between a position in which the rear wall is vertical and another position in which the rear wall is inclined. A catch member is pivotally mounted on the device and locks the movable rear leg member in a



position to incline the supporting device. When the device is in a vertical position the catch member is pivoted to an inoperative position and the movable rear leg member is pivoted back to its position wherein the supporting device is vertical.

3,759,398

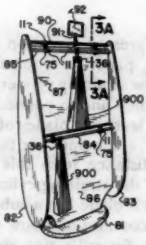
FABRIC DISPLAY AND MERCHANDISING SYSTEM

Russell H. Romney, 3259 Bon View Dr., Salt Lake City, Utah

Continuation-in-part of Ser. No. 15,785, March 2, 1970, Pat. No. 3,633,250. This application Oct. 14, 1971, Ser. No. 189,166

Int. Cl. A47f 7/16

U.S. Cl. 211—46 **9 Claims**



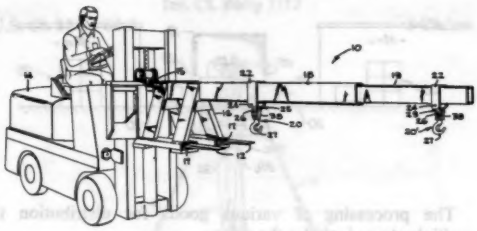
A system is disclosed for holding and displaying samples of fabrics so they can be conveniently examined by prospective customers. Identifying means for each sample are provided so that the customer may order, e.g., by number from rack storage in another part of the mercantile establishment. Pivoted connecting elements mounted for universal rotation are employed to support the fabric holding means in such a way that numbers of large and different fabric samples are displayed clearly, but stored compactly, being supported on elongated, circular or cabinet type racks.

3,759,399

ADJUSTABLE, SELF-LOCKING LOAD SUPPORTING MECHANISM FOR BOOMS

Clifford A. Glass, Chicago; Robert E. Kraft, Naperville, and Edward W. Schmidt, Chicago, all of Ill., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 14, 1972, Ser. No. 217,900
Int. Cl. B66c 23/06
U.S. Cl. 212—55 9 Claims



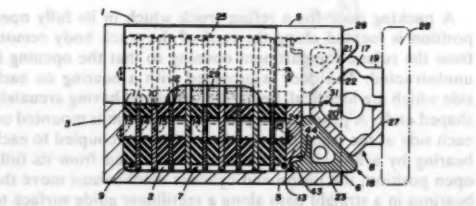
An infinitely adjustable self-locking stirrup for mounting intermediate load hooks on an extensible boom attachment for fork lift trucks is disclosed. The mounting includes a U-shaped yoke supported on the top of one of the horizontal extensible boom sections and a pivoted clevis. The clevis is supported in the legs of the yoke closely adjacent the underside of the boom section and provides a mounting for the load hook. When the vertical axis of the clevis is maintained normal to the bottom of the boom section, a top surface on the clevis is parallel to, and has a slight clearance with, the bottom of the boom section so the stirrup mounting is free to slide along the boom section. However, when the clevis is tilted slightly, the top surface wedges against the bottom of the boom section and locks the stirrup mounting in a given position.

3,759,400

HOUSED DRAFT GEAR

Geoffrey Wilton Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 24, 1972, Ser. No. 237,819
Int. Cl. B61g 11/08, 9/06
U.S. Cl. 213—22 9 Claims



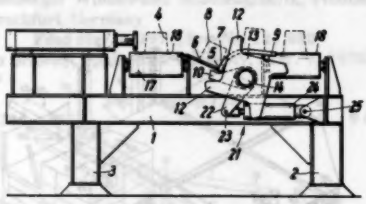
A housed draft gear for railway vehicles having friction and rubber cushioning units arranged in tandem in an open-fronted cavity of uniform cross section in a housing and held in assembled relation in the cavity, the friction and rubber cushioning units being of improved construction.

3,759,401

MANIPULATOR FOR POLYGONAL CROSS-SECTION BILLETS, PARTICULARLY CAST COPPER BARS

Otto Kreuz, Duisburg, and Stefan Raab, Essen, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed June 14, 1971, Ser. No. 152,867
Claims priority, application Germany, June 18, 1970, P 20 29 999.4
Int. Cl. B65g 7/00
U.S. Cl. 214—1 OG 9 Claims



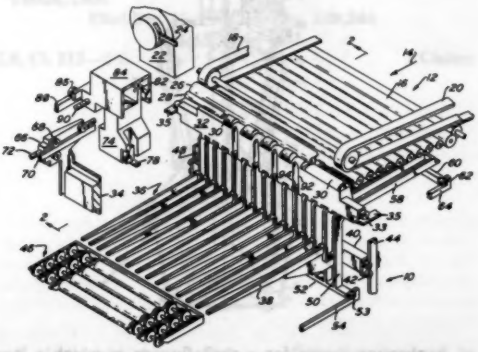
The manipulator includes a stationary tipping trough including a pair of longitudinally spaced substantially angular supporting surfaces each having a downwardly and inwardly sloping inlet side and an upwardly and outwardly sloping steeper outlet side. A apir of tipping levers are oscillatable by an associated fluid pressure actuator to engage a longitudinal corner edge of a billet in the tipping trough to tilt the billet so that it rests on a different side. A pair of lifters, having projecting fingers, are oscillatable about the same axis as the tilting levers by a different fluid pressure actuator so that the fingers engage the then lower side of a billet in the tipping trough and move the billet over the outlet sides of the supporting surfaces. The tipping trough preferably is arranged between a billet feeding roller conveyor and a billet discharge roller conveyor, and switch means are provided for engagement with a billet moving along the feeding conveyor. The billets have sloping ends providing respective projecting noses and the switch means are so arranged that, depending upon which switch is engaged by a sloping nose, an appropriate billet tipping operation is initiated. Alternatively, the switch means may be arranged beneath a billet support surface, again for cooperation with the nose of a billet, or may be arranged to project into the tilling trough for engagement by the nose of a billet.

3,759,402

COUNTER EJECTOR

Thomas R. Hitch, Aldan, and William J. Wilson, Philadelphia, both of Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Apr. 10, 1972, Ser. No. 242,319
Int. Cl. B68g 57/00
U.S. Cl. 214—6 H 13 Claims



In apparatus which counts the number of sheets accumulated on an elevator and then transfers the pile to a conveyor,

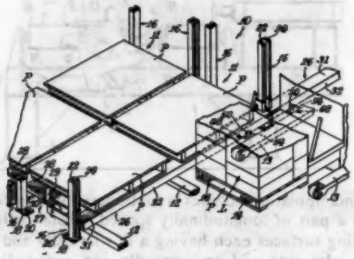
some of the members which push the pile off the elevator onto the conveyor have an angled camming surface at their upper end.

3,759,403

STORAGE SYSTEM

Henry C. Fernstrom, Northbrook, Ill., assignor to Barrett Electronics Corporation, Northbrook, Ill.

Filed Aug. 23, 1971, Ser. No. 173,851
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **3 Claims**



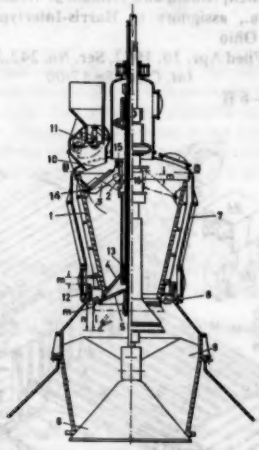
A storage system for pallets for access by straddle type fork lift trucks and stock selector trucks from the same aisles, wherein guide rails are disposed adjacent each aisle for cooperation with guide means on the stock selector trucks to guide the stock selector trucks through the aisles when selecting cartoned items from the pallets, the guide rails being positioned to allow passage thereunder of forwardly extending base legs on the straddle type fork lift trucks when loading pallets into the storage racks.

3,759,404

CHARGING DEVICE FOR A SHAFT FURNACE

Rene Mahr, Luxembourg, Luxembourg, assignor to Societe Anonyme des Anciens Etablissements Paul Wurth, Luxembourg, Luxembourg

Filed May 27, 1971, Ser. No. 147,592
Claims priority, application Luxembourg, May 27, 1970, 60996
Int. Cl. F27b *11/12*
U.S. Cl. 214—37 **1 Claim**



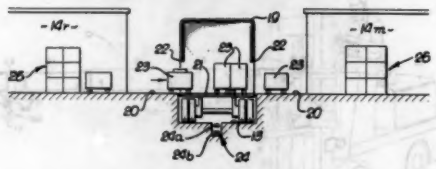
A charging device for a shaft furnace in which a lower chamber is defined between two charging bells suspended on longitudinally movable shafts. An upper chamber contains a rotatable hopper. The hopper is supported by three arms connected between the inner surface of the hopper and a sleeve enclosing the shafts on which the bells are suspended.

3,759,405

METHOD AND APPARATUS FOR LOADING TRUCKS

Robert J. Barry, 462 Arlington Dr., Pasadena, Calif.

Filed July 7, 1971, Ser. No. 160,275
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 D **7 Claims**



The processing of various goods for distribution to multiple stores includes the steps:

a. supplying the various goods at different stations spaced along a loading way at a distribution location;

b. advancing a series of side-loading carriers in sequence along said way, each such carrier associated with at least one of said stores;

c. selectively side loading onto each carrier, as it advances past said stations, the particular goods required by the carrier associated store; and

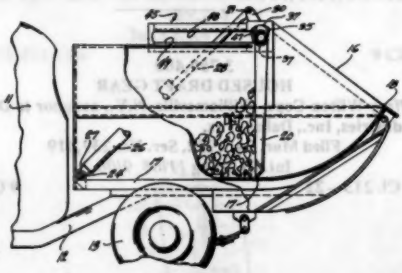
d. advancing each such carrier to its associated store after completion of said side loading at said distribution station.

3,759,406

PACKING DOOR FOR REFUSE TRUCK

Ronald W. Nickel, 604 Glenview Ave., Waukesha, Wis.

Filed Nov. 30, 1971, Ser. No. 203,262
Int. Cl. B60p *1/48*
U.S. Cl. 214—83.3 **5 Claims**



A packing door for a refuse truck which in its fully open position is located along the roof of the truck body remote from the refuse compartment opening so that the opening is unobstructed. The door is provided with a bearing on each side which are identical, being elongated and having arcuately shaped ends. A piston and cylinder mechanism is mounted on each side of the truck body with a piston rod coupled to each bearing by a link. When the door is actuated from its fully open position, the piston and cylinder mechanisms move the bearings in a straight path along a rectilinear guide surface to move the door in a corresponding straight path rearwardly of the body until it extends above the opening of the refuse compartment. At the end of the rectilinear guideway the bearings enter a rotary guideway which prevents further rectilinear movement but guides the bearings in a rotary movement. Because of their overcenter connections to the bearings, further actuation of the piston rods causes rotation of the

bearings in their associated rotary guideways to produce a corresponding rotation of the door through the opening into the refuse compartment for packing the refuse contained therein. Opposite actuation of the piston and cylinder mechanisms produces a reverse movement of the door for opening the compartment.

3,759,407

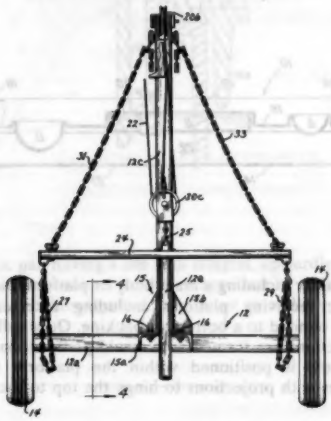
TOWING VEHICLE

Everett Boster, W. Star Rt., McLeansboro, and James E. Willis, R.R. No. 1, Ewing, both of Ill.

Filed Mar. 22, 1971, Ser. No. 126,842

Int. Cl. B60p *3/12*

U.S. Cl. 214—86 A **3 Claims**



A towing vehicle characterized by a wheel mounted framework having a downwardly disposed vehicle receiving member, where winch means move a crossmember to which the towed vehicle is secured, and where support chains extending between a portion of the framework and the crossmember assume the load of the towed vehicle upon release of the winch means.

3,759,408

APPARATUS FOR HANDLING ROD-LIKE ARTICLES

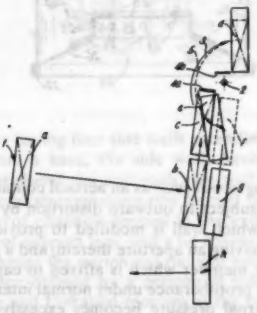
Tom Rowlands, and James George Edward Hillman, both of London, England, assignors to Molins Machine Company Limited, London, England

Filed Nov. 23, 1970, Ser. No. 91,769

Claims priority, application Great Britain, Nov. 26, 1969, 57,743/69

Int. Cl. B65g *65/34*

U.S. Cl. 214—302 **16 Claims**



This invention concerns a tray unloader for cigarettes in which each tray in turn is inverted to discharge the cigarettes downwards onto a conveyor system. The conveyor system carries the cigarettes to a reservoir and stops while the trays are being changed, but cigarettes can be withdrawn continuously from the reservoir. A control plate rests on the surface of the cigarettes to keep the surface level while the cigarettes move downwards through the tray as it is unloaded.

3,759,409

CRANE

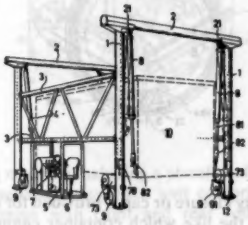
Jorg Wenzel, Freudenberg/Main, and Hans Rieschel, Miltenberg/Main, both of Germany, assignors to Joseph Haamann Freudenberger Winden-und Hebezeugfabrik, Freudenberg/M.-Kirschfurt, Germany

Filed Mar. 4, 1971, Ser. No. 121,050

Claims priority, application Germany, Mar. 7, 1970, P 20 10 945.9

Int. Cl. B60p *1/64*

U.S. Cl. 214—394 **9 Claims**



A gantry or portal crane has two longitudinally spaced portals which are connected by longitudinally extending structural members to form therewith a self-supporting structure. The lower ends of the uprights of the portals are provided with wheels which can be swung to a lower position engaging the ground and an upper position removed from the ground in which the lower ends of the portals rest directly on the ground. The upper ends of the portals are provided with traverse members each carrying two transversely spaced hydraulic and cylinder piston units which are connected for universal pivoting movement to them, and which are provided at their free ends with engaging portions for engaging a load. A hydraulic system is provided utilizing four separate hydraulic circuits each connected with one of the cylinder and piston units, a central control by means of which all of the cylinder and piston units can be operated in unison, and individual control valves located on the uprights of the portals by means of which each of these cylinder and piston units can be individually operated.

3,759,410

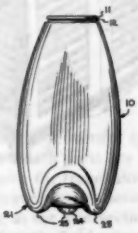
PRESSURE RESISTANT PLASTIC CONTAINER

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 15, 1971, Ser. No. 208,244

Int. Cl. B65d *1/02*

U.S. Cl. 215—1 C **2 Claims**



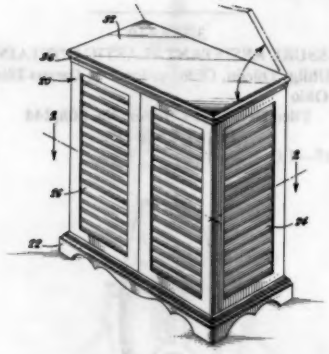
A plastic container having a configuration designed to package goods capable of generating internal pressure is pro-

vided. The container has a circular cross-sectional configuration with side walls following a generally outwardly convex arcuate path from the upper mouth portion toward the base at the lower end. The base is provided with three bulbous feet extending downwardly from a generally rounded bottom portion for supporting the container in an upright position.

3,759,411
SAFETY CLOSURE CAP AND CONTAINER FOR DRY AND LIQUID CONTENTS
William Horvath, 420 River Rd., Chatham, N.J.
Filed Oct. 29, 1971, Ser. No. 193,834
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **2 Claims**

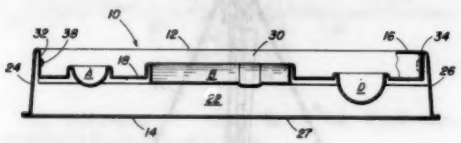
A snap-on safety closure or cap is provided for containers of pills, liquids and the like which container cannot readily be opened by small children uninstructed in its use but can be easily opened by an adult. The cap snaps in place on the container and thereafter cannot be lifted off the container except by rotating the cap with respect to the container until a cam on the inside of the cap engages a cam on the rim of the container upon which action the rim of the cap becomes distorted, lifts up and allows the fingernail and part of the finger tip to be inserted under the cap's edge to lift the cap and snap it off.

3,759,412
CONTAINERS AND THEIR CONSTRUCTION
Paul S. Bush, Salamanca Rd., Little Valley, N.Y.
Filed Nov. 13, 1970, Ser. No. 89,200
Int. Cl. B65d *7/28, 11/18*
U.S. Cl. 220—7 **6 Claims**



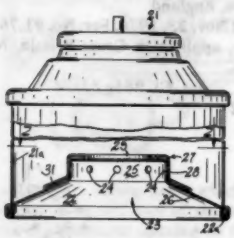
Plastic containers, such as clothes hampers, constructed of plastic sidewalls and top and bottom walls, the walls being separately molded for permanent resilient interlocking assembly by the consumer to form a rigid, stable structure, thus being shippable in knock-down form for saving of shipping space.

3,759,413
CONTAINER
Gerald J. Ardito, 29 Meadow Rd., Old Westbury, N.Y.
Filed Mar. 1, 1971, Ser. No. 119,797
Int. Cl. B65d *25/00*
U.S. Cl. 220—16 **2 Claims**



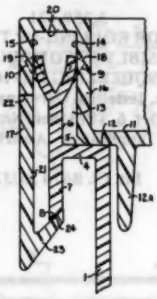
A container including a main body or platform base having a product-receiving platform including recesses formed therein is bonded to a bottom or backing. Outwardly extending projections are formed within said platform base. A top having slots is positioned within the platform base and cooperates with projections to hinge the top to the platform base.

3,759,414
SELF-VENTING VESSEL
Walter C. Beard, South St., Middlebury, Conn.
Filed Mar. 1, 1971, Ser. No. 122,590
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 R **7 Claims**



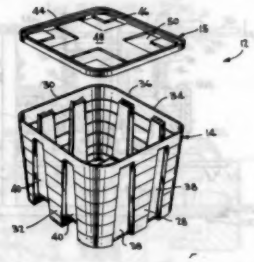
A self-venting vessel such as an aerosol container, having at least one wall subject to outward distortion by internal pressure buildup, which wall is modified to provide an annular protuberance having an aperture therein, and a generally cup-shaped closure member which is affixed to cap and seal the aperture in the protuberance under normal internal pressures. When the internal pressure becomes excessive, the closure member is forced by the resulting distortion of the wall to slip from its original position, thus uncapping the aperture and venting the vessel.

3,759,415
PAIL
Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics, Incorporated, Erie, Pa.
Filed June 13, 1972, Ser. No. 262,934
Int. Cl. B65d 43/10
U.S. Cl. 220—60 7 Claims



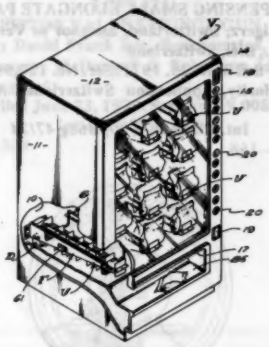
A plastic pail having a rim with integral, upwardly diverging peripheral lips received in and compressed by a downwardly presented peripheral groove in a cover to make a fluid tight seal.

3,759,416
CONTAINER
Neil V. Constantine, Atlanta, Ga., assignor to International Bakerage, Inc., Atlanta, Ga.
Filed Aug. 25, 1970, Ser. No. 66,769
Int. Cl. B65d 21/02, 1/44
U.S. Cl. 220—97 F 3 Claims



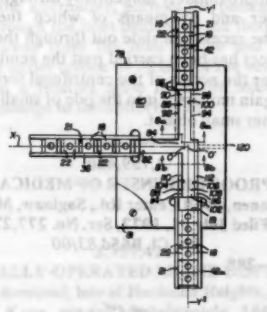
A container having four side walls extending upwardly and outwardly from a base, the side walls having upper edges defining a peripheral rim and each side wall having longitudinal and lateral strengthening ribs formed therein, the base having a pair of channels formed in the exterior thereof to define a pair of support legs, and a lid having a peripheral lip adapted to engage the peripheral rim and having a depressed exterior surface defined by a peripheral ledge adjacent the peripheral lip and L-shaped recesses at the corner of the lid, the peripheral ledge being dimensioned to capture the support legs of a similar container when the containers are stacked one upon the other.

3,759,417
VENDING MACHINE
Currie Armstrong, and Clarence E. Christophersen, both of Los Angeles, Calif., assignors to said Armstrong, by said Christopherson, Los Angeles, Calif.
Filed June 3, 1971, Ser. No. 149,549
Int. Cl. G07f 11/00; B65g 15/42
U.S. Cl. 221—85 7 Claims



A vending machine including a plurality of product supporting and dispensing units, each unit comprising a cantilever supported frame with front and rear rollers, an elongate endless, conveyor belt engaged about and between the rollers and having longitudinally spaced normally vertical transversely extending product separating fences with forwardly and rearwardly, projecting stabilizing pads slidably engaged on the belt for longitudinal adjustment and laterally spaced, elongate, laterally adjustable longitudinally extending and vertically projecting guide members at opposite sides of the belt.

3,759,418
PART ORIENTING DEVICE
Elmer E. Willson, Clawson, and Thomas M. Pouch, Farmington, both of Mich., assignors to Multifastener Corporation, Livonia, Mich.
Filed June 11, 1971, Ser. No. 152,284
Int. Cl. B23q 7/00
U.S. Cl. 221—157 4 Claims



In an article handling and transfer system, a parts orienting device is provided in which parts are fed in random orientation from a parts source for travel along a first path and subsequent transfer for travel along a second and third path, normal to said first path; at the intersection of the first path with the second and third path, fluid power actuated sensing and direction changing means are provided which automatically are responsive upon the presence of a part in the intersection

to change the direction of travel of the part from the first path into the second or third path; in a further embodiment, the fluid power actuated sensing and direction changing means are effective to orient randomly fed parts for transfer of parts disposed in one position along the second path and for transfer of parts disposed in another position along the third path.

3,759,419

APPARATUS FOR SEPARATING AND INDIVIDUALLY DISPENSING SMALL ELONGATE PARTS

Hans Iseli, Ligerz, Switzerland, assignor to Vereinigte Drahtwerke A.G., Biel, Switzerland

Filed Mar. 25, 1971, Ser. No. 127,991

Claims priority, application Switzerland, Apr. 7, 1970, 5097/70

Int. Cl. B65h 9/00; B65g 47/24

U.S. Cl. 221—168 **10 Claims**

An apparatus for aligning, separating and individually dispensing small substantially elongate objects which comprises an object dispensing drum member for receiving therein a stack supply of small objects, said drum member being rotatable about a horizontal axis at such rotational speed that a small object entrained by the drum member is subjected to centrifugal forces greater than its force of gravity. Means located within the drum member extend over at least a portion of the inner peripheral surface thereof for aligning the small objects within the drum member such that the primary lengthwise direction of such small objects is substantially aligned with the peripheral direction of the drum member. There are also provided means defining at least one recess, serving as an object dispensing element, at the bottom of the aforesaid aligning means, such recess when passing beneath the pile of small objects removing one such small object from said pile. A channel communicates with the recess, this channel opening approximately tangentially through the wall of the drum member and by means of which the small object disposed in the recess can slide out through the channel after the small object has been carried past the zenith of said drum member under the action of the centrifugal forces, but before said recess again immerses into the pile of small objects for engaging a further small object.

3,759,420

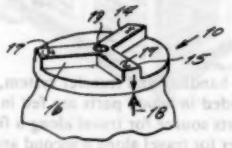
FOOLPROOF DISPENSER OF MEDICAL PILLS

Uno O. Karkanen, 6950 Center Rd., Saginaw, Mich.

Filed July 31, 1972, Ser. No. 277,278

Int. Cl. B65d 83/00

U.S. Cl. 221—288 **1 Claim**



A container for dispensing pills that might be harmful if taken by children or simple-minded persons; the device consisting of a novel closure that must be adjusted and positioned in several precise subsequent attitudes so to make a pill to travel a tortuous path between the container interior and a dispensing opening, the closure consisting of a rotatable cap on a stationary base, and wherein the precise subsequent steps are almost impossible by chance to be made by a child or simple adult, but which can be quickly and easy done by a knowledgeable adult.

3,759,421

TURNING KEY FOR ROLLING-UP THE EMPTY END OF A TUBE, POSSIBLY IN COMBINATION WITH A SQUEEZING DEVICE

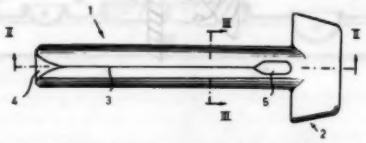
Heinrich Hausmann, Jestetten, Germany

Filed Oct. 6, 1971, Ser. No. 187,026

Claims priority, application Austria, Oct. 6, 1970, A 9000/70

Int. Cl. B67d 35/32

U.S. Cl. 222—99 **4 Claims**



A turning key for rolling up the empty end of a tube includes a handle and an integrally formed shaft. The shaft has a slit defined by its thin radially elastic walls. There is an opening at the end of the slit nearest the handle to accommodate the edge of the tube. The slit readily grasps an empty tube because it is normally closed.

3,759,422

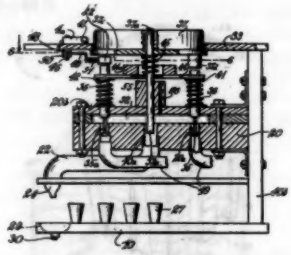
BEVERAGE MIXING AND DISPENSING APPARATUS

Richard H. Matheney, 233 W. 64th St., Los Angeles, Calif.

Filed Nov. 8, 1971, Ser. No. 196,487

Int. Cl. B67d 5/56

U.S. Cl. 222—129.4 **6 Claims**



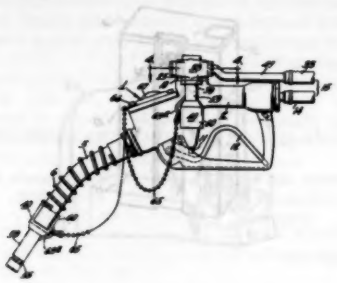
A mixing and dispensing apparatus for alcoholic and soft beverages. A stand has receptacles receiving inverted bottles of the beverages. The rate of discharge from the receptacles is controlled by primary valves to lead the beverages into a mixing chamber having a dispensing outlet. The inlets to the mixing chamber are controlled by secondary valves. A table extends from the stand and has a control knob depressible to operate the secondary valves selectively for alcoholic beverages; and independent dials are operable alternately with the alcoholic beverage controls to open secondary valves pertaining to the soft beverages. The knob and dials are rotatable to clear the controls and afford direct opening of all the secondary valves by the added depression of the knob.

3,759,423

CONTAMINATION-PREVENTING NOZZLE

William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed May 18, 1971, Ser. No. 144,495
Int. Cl. B67d 5/32
U.S. Cl. 222—153 5 Claims



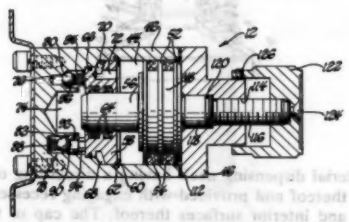
In a dispensing nozzle used for dispensing solely one or the other of two liquid fuel components, and also for dispensing various blends of the two components, contamination of one component by the other, when dispensing solely said one component, is prevented by utilizing a manually-controllable shut-off valve for the other component, in the nozzle body. A detachable nozzle reducing extension, which must be used in order to dispense solely said one component into specially-equipped automobiles requiring this fuel, is held captive on the nozzle body, and cannot be removed for application to the nozzle spout unless the shut-off valve is first operated to its off position. Two separate fuel inlet passageways leading to the nozzle main shut-off valve are employed, one for each respective one of the two fuel components, and a separate spring-loaded check valve is utilized in each passageway, in close juxtaposition to the main nozzle valve.

3,759,424

LUBRICANT DISPENSING MEANS AND SYSTEM

Edwin A. Maddock, 1510 Cherokee, Royal Oak, Mich.

Filed Dec. 28, 1970, Ser. No. 101,880
Int. Cl. G01f 11/06
U.S. Cl. 222—309 6 Claims



A means and method for dispensing a viscous fluid in metered amounts to provide lubricity for metal drawing in a forming press and which includes a positive displacement pump having an integral piston head and plunger construction, one-way ball check valves in inlet and outlet flow passages, spray nozzles connected to the pumps outlet ports by flexible conduit lines and swival mounted on magnetic mounting blocks for positioning ease, adjustment means on the pump for metering control by positioning an abutment stop within the piston chamber area, and a manually operated air valve for cyclic operation of the fluid pump in the normal operating use of the forming press.

3,759,425

PISTON VALVE SYRINGE GUN

Ronald Harvey David Frank Lee, Berkhamsted, England, assignor to Cooper, McDougall & Robertson Limited, Hertfordshire, England

Filed June 23, 1970, Ser. No. 49,008
Int. Cl. G01f 11/06
U.S. Cl. 222—309 13 Claims

A syringe gun suitable for dispensing liquid or semi-liquid comprises, in combination, a barrel, a piston rod, a piston attached to the piston rod and located within the barrel for discharging the contents of the barrel therefrom, an inlet valve enabling the passage of liquid or semi-liquid into the barrel, and a discharge valve enabling the passage of liquid or semi-liquid out of the barrel. At least one of said valves is the combination of a chamber, an inlet orifice to the chamber, a plate within the chamber of substantially greater cross-sectional area than that of the inlet orifice, the plate having an inlet side and an outlet side, a passage for liquid or semi-liquid from the inlet side of the plate to the outlet side of the plate, and an outlet orifice for enabling the passage of liquid or semi-liquid from the chamber. In this valve arrangement the plate seals the inlet orifice under pressure upon the outlet side of the plate and, in the alternative, permits the passage of liquid or semi-liquid through the inlet orifice, by the flexing or moving of the plate away from the inlet orifice and through said passage to the outlet orifice by flexing of the resilient plate or the moving of a floating plate from the inlet orifice, and through said passage to the outlet orifice.

3,759,426

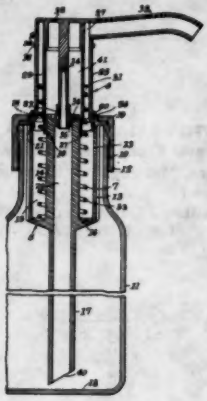
MANUALLY-OPERATED LIQUID DISPENSER

Neil G. Kane, deceased, late of Hacienda Heights, Calif., and by Virginia L. Kane, special administratrix, 15411 Rojas St., Hacienda Heights, Calif.

Filed Sept. 8, 1972, Ser. No. 287,564
Int. Cl. B67d 5/40
U.S. Cl. 222—385 8 Claims

A liquid dispenser for manual operation comprising a body for connection to the top of a liquid container, and a contractible head having a discharge portion and fitted into said body, both the body and the head being of elastomeric plastic material, spring means for retaining the head extended in non-dispensing position, and the body and the head being provided

with integral sealing portions that cooperate to control flow from said container. The usual ball valves common to the present type of device are dispensed with said sealing portions



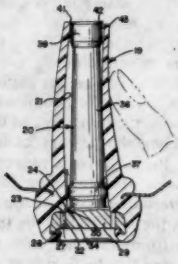
serving as pressure-operated valve-like means that control flow of liquid from the container to said discharge portion of the head.

3,759,427

DISPENSING VALVE ASSEMBLY FOR PRESSURIZED CONTAINER

Thomas R. Stanley, Brookfield, and Carmen T. Mascia, Westchester, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 22, 1968, Ser. No. 778,077
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.23 **7 Claims**



A dispensing valve assembly for dispensing a product from a pressurized container. The dispensing valve assembly includes a nozzle and a valve stem which are mounted to permit misalignment of the valve stem axis and the nozzle axis. The nozzle and valve stem include a first valve means at the terminal end of the nozzle and a second valve means spaced from the other end. The valve means are seated to prevent product flow through the nozzle when the stem and nozzle are in alignment. Upon the application of a lateral force to the nozzle, the axes are out of alignment and the valve means unseated so that the product is dispensed through the nozzle.

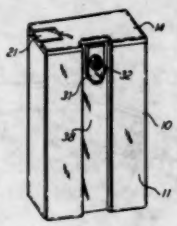
3,759,428

DISPENSER TYPE BOX

Elmo W. Heter, Jr., Lewiston, Idaho, assignor to Sheridan Products Inc., Racine, Wis.

Filed June 14, 1971, Ser. No. 152,823
Int. Cl. B67d *3/00*
U.S. Cl. 222—480 **2 Claims**

A dispenser type box of the type useful in containing comminutive goods, including gun pellets which can be poured from the box. The box has a body portion with a rectilinear open top having a narrow side and with a first cover hinged along the longer side to cover the box opening. The first cover has its own opening at its narrower side, and a second cover is hinged at the first cover's opening, all such that the goods can



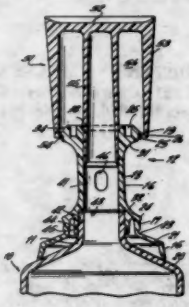
be poured from the box at the narrower side of the box and through the second opening. Both covers are finger-press operated so that they can be secured and released. Also, the entire unit is made of one plastic material, including the two hinges for the two covers.

3,759,429

PUSH-PULL CAP AND NECK ASSEMBLY

Gerald J. Ardito, Old Westbury; Jerome S. Newman, Floral Park, and Samuel E. Sarris, Jamaica, all of N.Y., assignors to Inventions Unlimited Incorporated, Fresh Meadows, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,827The portion of the term of this patent subsequent to Sept. 20, 1988, has been disclaimed.
Int. Cl. B65d *47/12*
U.S. Cl. 222—546 **23 Claims**



A material dispensing neck having a dispensing orifice in the side thereof and provided with engaging recesses on the exterior and interior surfaces thereof. The cap of the container has a plunger which extends into the neck and an outer portion which fits over the container neck. The lower extremity of the outer portion of the cap is provided with an inwardly extending peripheral engaging lip which cooperates with the engaging recesses on the outer surface of the neck in open and closed positions. The plunger may also be provided with a resilient skirt which is compressed within the neck and outwardly biased to provide for sealing engagement, notwithstanding tolerance discrepancies. The neck is secured to an existing container neck by the engaging means on the interior surface thereof, thereby providing an existing container with a push-pull cap and neck assembly.

3,759,430

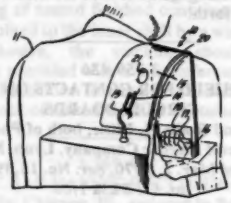
CLOTHES CARRIER

Bobby L. Ward, 8402 Lewis Pl., Orlando, Fla.

Continuation of Ser. No. 11,369, Feb. 16, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,538

Int. Cl. A45f 3/00

U.S. Cl. 224—45 T 1 Claim



A clothes carrier apparatus made of a flexible elongated piece of material and having a handle at one end for gripping the carrier and connecting means on the other end thereof for connecting coat hangers, or the like, thereto. The clothes carrier is adapted to set across the shoulder for support of the clothes which clothes may be enclosed in a garment bag, dress or coat carrier container. The coat carrier may also have an attachment for attaching the loaded clothes carrier to a car hanger, door hook, or the like, and is flexible so as to be easily rolled or folded for storage.

3,759,431

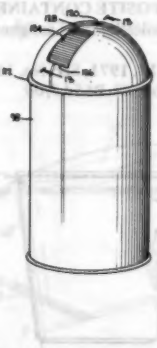
PRESSURIZED CONTAINERS

Kenneth D. Vos, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Division of Ser. No. 158,194, June 30, 1971. This application July 31, 1972, Ser. No. 276,802

Int. Cl. B65d 83/14

U.S. Cl. 222—402.21 7 Claims



This invention relates to a pressurized package of the class which includes a container for receiving a product, propellant means in the container for discharging the product from the container, and a dispensing assembly mounted on the container which is characterized by an actuating lever that shifts to displace a flexible resilient valve body member from a position in which its discharge orifice-containing surface is in sealed engagement, at least partially effected by the internal container pressure, with a valve cap, to a position in which it is aligned with an exit opening of the overcap.

3,759,432

WEB DRIVE AND WEB PROCESSING CONTROLS FOR WEB PROCESSING MACHINES

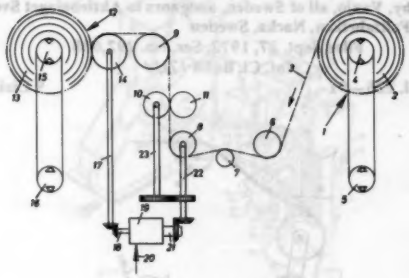
Armin S. P. Hutzenlaub, Wiehl, Germany, assignor to Erwin Kampf Maschinenfabrik, Wiehl, Germany

Filed June 23, 1972, Ser. No. 265,425

Claims priority, application Germany, June 24, 1971, P 21 31 446.5

Int. Cl. B65h 17/20

U.S. Cl. 226—42 4 Claims



A web drive and web processing controls for web processing machines which include a synchronous torque booster whose input rotation is derived from the web spaced near the storage roll via a web-driven idler roller and whose output rotation positively drives web advancing rollers and the web processing rollers or other processing means, thereby maintaining a constant controlled tension on the web in the processing region.

3,759,433

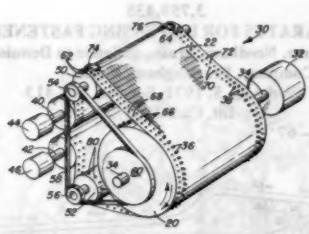
METHOD AND APPARATUS FOR TRANSPORTING A STRIP OF RECORDING MATERIAL

Heinz Joseph Gerber, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Nov. 10, 1970, Ser. No. 88,259

Int. Cl. G03b 1/20

U.S. Cl. 226—54 23 Claims



A feed arrangement for transporting a strip of recording material past a recording pen includes a feed roller and a positioning roller both drivingly engageable with the strip and driven in synchronism. The feed roller is located in advance of the positioning roller and feeds the strip material from a storage roll to the positioning roller. Slack in the strip of recording material is maintained between the feed roller and the positioning roller to remove from the portion of the strip engaged by the positioning roller all forces required to advance the strip of recording material from storage. The feed roller has sprocket pins which engage a first set of apertures along the edge of the recording strip, and the positioning roller also has sprocket pins which engage a second set of apertures

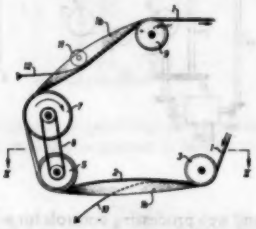
along the edge of the recording strip. Since the pins of the positioning roller need exert only small forces on the engaged portion of the strip the possibility of such pins tearing or deforming the strip, with resulting inaccurate positioning of the strip, is eliminated or at least greatly reduced. The positioning roller may be a drum which also supports the recording strip for coaction with the recording pen.

3,759,434

THREADING MECHANISM

Bengt Lindstrum, Gustavsberg; Bengt Citron, Handen; Erik Nelenius, Vaxjo; Ingemar Karlsson, Morners, and Sven Olof Rosby, Vaxjo, all of Sweden, assignors to Aktiebolaget Svenska Faltfabriken, Nacka, Sweden

Filed Sept. 27, 1972, Ser. No. 292,608
Int. Cl. B65h *17/34*
U.S. Cl. 226—91 **9 Claims**



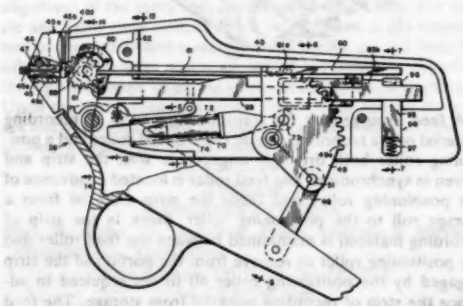
Threading mechanism for a treatment plant which includes a band of flexible material folded upon itself to grip the leading end of the web material, the fold being closed on the web material adjacent the entrance end of the plant and separated from the web material at the discharge end of the plant. The mechanism includes a guiding surface or roller positioned adjacent the discharge end having a profile to open the folded band more than 180°, along with a drive roller for pulling the band around the profiled surface. The mechanism also includes jet elements for positively engaging the web material being treated into the fold of the band prior to its re-entry into the chamber. In one embodiment of the invention the profiled surface and the guide roller are mounted a substantial distance below the exit and entrance rollers for the folded band.

3,759,435

APPARATUS FOR DISPENSING FASTENERS

Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Aug. 5, 1971, Ser. No. 169,413
Int. Cl. B25c *1/00*
U.S. Cl. 227—67 **30 Claims**



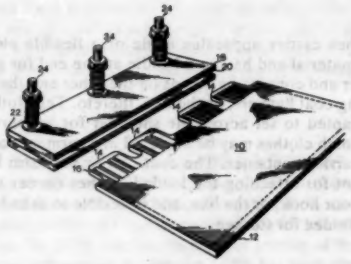
Apparatus for dispensing fastener attachment members of the type having a filament with heads on both ends, the device including a casing, a needle projecting from the casing, the needle having a bore through which the fastener attachment member is adapted to be dispensed, a plunger or ejector adapted to force one head of the attachment member through the needle bore, the plunger advanced by the combination of a gear and sliding rack, the sliding rack in the form of a thin plate and in which the attachment members are fed before the needle and in front of the ejector by an indexing wheel advanced by a feed pawl with a slotted hole which allows it to rock in and out of engagement with the indexing wheel as it is moved back and forth.

3,759,436

SOLDER SHIELD FOR CONTACTS ON PRINTED CIRCUIT BOARDS

Paul E. Foster, and Rollie H. Little, both of Phoenix, Ariz., assignors to General Electric Company, Lynn, Mass.

Filed Mar. 2, 1970, Ser. No. 15,395
Int. Cl. B23k *1/00*
U.S. Cl. 228—57 **5 Claims**



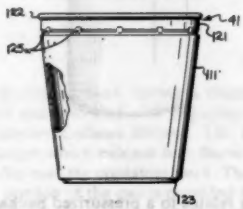
A shield for masking electrical contacts on printed circuit boards during flow soldering. The shield is made of three elongated pieces of printed circuit board material assembled to have a generally U-shaped cross section. The edge of the board carrying the contacts to be masked is inserted into the bight of the U. The shield pieces are forced together by spring-loaded bolts to seal the inserted edge.

3,759,437

COMPOSITE CONTAINER

Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 14, 1971, Ser. No. 162,400
Int. Cl. B65d *3/00*
U.S. Cl. 229—1.5 B **7 Claims**



A container of composite construction which comprises a wide-mouthed inner shell formed of seamless thermoplastic material in a generally frusto-conical configuration so that like shells are nestable in a compact stack, the sidewall portion of the shell being of relatively thin and fragile construction, and which further comprises an externally decorated, relatively stiff paperboard sleeve which is wound around the side wall

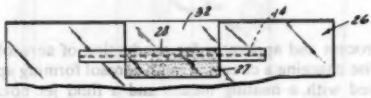
portion of the shell and which is adhesively secured in face to face reinforcing contact therewith, the opposed ends of the blank from which the sleeve is formed each comprising a series of alternating recesses and protrusions which are interengageable with corresponding protrusions and recesses in the other end to accurately register the ends of the sleeve with respect to one another in a serpentine-shaped butt seam. In the preferred embodiment, the side wall of the inner shell is provided with a stacking shoulder immediately below the rim portion of the shell to facilitate denesting of nested shells and/or denesting of nested finished containers and, when the outer sleeve is joined to the inner shell by a water based or solvent-based adhesive, the stacking shoulder may advantageously be provided with a circumferentially spaced series of vent indentations to permit the escape of adhesive vapors from a stack of nested finished containers.

3,759,438

PLASTIC BAG HAVING RECLOSING MEANS

Raymond J. Ruda, Chicago, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Filed Aug. 14, 1970, Ser. No. 63,695
Int. Cl. B65d *33/16*
U.S. Cl. 229—65 **3 Claims**



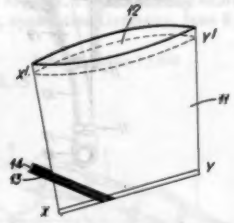
A plastic bag of heat-sealable material is provided with a length of wire covered with a flat strip of paper adjacent to the mouth end of the bag, there being a heat-seal connection holding the paper strip against the bag material.

3,759,439

BAG WITH TEAR STRIP

William Telford Cross, Cuddington; Margaret Lilian Steel, Runcorn, and Stephen Edward Trueman, Warrington, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 9, 1971, Ser. No. 132,674
Claims priority, application Great Britain, Apr. 14, 1970, 17,687/70
Int. Cl. B65d *33/00*
U.S. Cl. 229—66 **5 Claims**



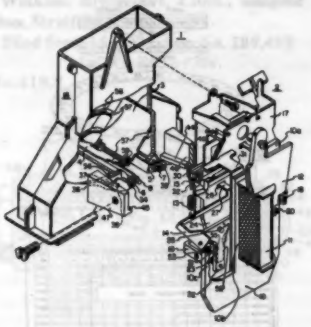
Plastic film having extending wholly or partly across it a flexible reinforcement having a highly localised line of weakness, the reinforcement being bonded to the surface of the film or incorporated partly or wholly within its thickness. The reinforcement may be, for example, a woven textile web material or plastic sheet. The resulting film may be used to make containers which can be easily opened by tearing along the line or lines of weakness in the reinforcement.

3,759,440

COIN DISPOSAL APPARATUS

Richard J. Hamilton, West Chicago, Ill., and Gerald B. McGough, Huntsville, Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 5, 1972, Ser. No. 250,709
Int. Cl. B65g *11/04*
U.S. Cl. 232—57.5 **9 Claims**



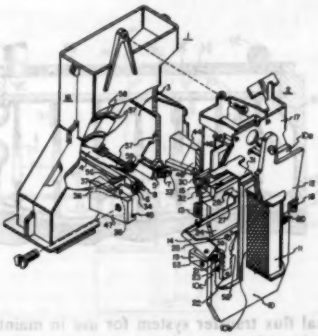
A coin collection and disposal mechanism is disclosed which includes a pair of doors which are positioned within a hopper, each door being pivotally supported about an axis common to both. Each door has a latch individual thereto and means are provided for opening one or the other of the doors to channel deposited coins into either a first or second passageway.

3,759,441

COIN DISPOSAL APPARATUS

Richard J. Hamilton, West Chicago, and Frank J. Petkewicz, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 5, 1972, Ser. No. 250,558
Int. Cl. B65g *11/04*
U.S. Cl. 232—57.5 **8 Claims**



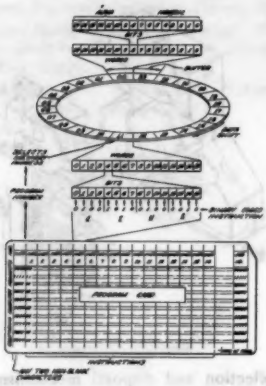
A coin collection and disposal mechanism is disclosed which includes a pair of doors which are positioned within a hopper, each door being pivotally supported about an axis common to both. Each door has a latch individual thereto and means are provided for opening one or the other of the doors to channel deposited coins into either a first or second passageway.

3,759,442

CARD PUNCH SYSTEM AND PROCESS

Clarence G. McCune, Balboa; John C. Vincer, Anaheim, and Kenneth E. Graves, San Jose, all of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.

Division of Ser. No. 47,215, June 18, 1970, Pat. No. 3,667,668.
This application Feb. 11, 1972, Ser. No. 225,685
Int. Cl. G06k *1/18*
U.S. Cl. 234—1 3 Claims



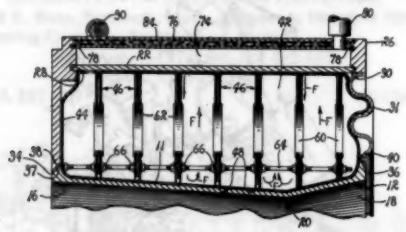
The time required to punch IBM cards can be reduced by using a memory for storing a large number of programs. The card reading capability of a conventional keypunch machine can be used to load the program information. The memory can also be used to store keystroke data while the system is executing automatic operations.

3,759,443

THERMAL FLUX TRANSFER SYSTEM

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Robert Alfred Freggens, Lancaster, Pa.

Filed June 16, 1971, Ser. No. 153,542
Int. Cl. F02k *1/02*
U.S. Cl. 239—127.1 7 Claims



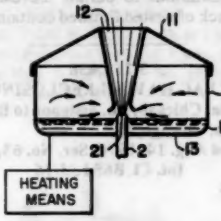
A thermal flux transfer system for use in maintaining the thrust chamber of an operative reaction motor at given temperatures. The system is characterized by an hermetically sealed chamber surrounding a thrust chamber to be cooled, having seated therewithin a plurality of parallel, longitudinally spaced, disk-shaped wick members formed of a metallic mesh and employed in delivering a working fluid, in its liquid state, radially toward the thrust chamber and subsequently delivering the working fluid, in its vapor state, away from the nozzle for thereby effecting a cooling of the nozzle, in accordance with known principles of an operating heat pipe.

3,759,444

PROCESS AND APPARATUS FOR THE PRODUCTION OF AEROSOLS

Seizo Tanaka, Kanagawa, Japan, assignor to Showa Denko Kabushiki Kaisha, Shiba-Tokyo and Sanko Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 802,457, Feb. 26, 1969 abandoned.
This application June 21, 1971, Ser. No. 158,671
Claims priority, application Japan, Feb. 28, 1968, 43/13121
Int. Cl. B05b *1/24*
U.S. Cl. 239—138 9 Claims



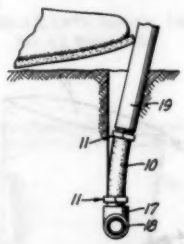
A process and apparatus for production of aerosols which comprise charging a chemical in an aerosol forming apparatus equipped with a heating means and a fluid jet nozzle, and ejecting a fluid from the fluid jet nozzle, whereby a chemical vapor is drawn in the reduced pressure area formed by jetting of the fluid, as well as rapidly ejected into the atmosphere.

3,759,445

FLEXIBLE FITTING FOR LAWN SPRINKLER SYSTEMS

Robert W. King, 9245 Noble Ave., Sepulveda, Calif.

Continuation of Ser. No. 104,019, Jan. 5, 1971, abandoned.
This application Jan. 2, 1973, Ser. No. 320,288
Int. Cl. A01g *25/00*
U.S. Cl. 239—201 7 Claims



A flexible fitting for lawn sprinklers. The fitting includes an elongated flexible tube. A pair of end members are secured to opposite ends of the tube. Each of the end members has external screw threading and an integral hexagonal nut for threadably connecting the fitting. One of the end members is connected to the pipeline and the other is connected to the sprinkler or sprinkler riser. The fitting provides a flexible connection between the sprinkler and the pipeline which is capable of yielding to prevent damage and injury in the event the sprinkler or sprinkler riser is accidentally struck.

3,759,446

ROCKET MOTORS HAVING ANGULARLY MOVABLE EXHAUST NOZZLES

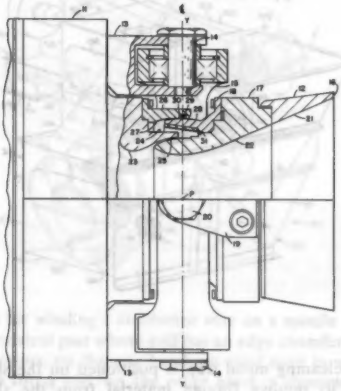
Jack Bligh, Innisfree, Aylesbury, Buckinghamshire, and Kenneth Edward Silman, Wendover, Buckinghamshire, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 21, 1972, Ser. No. 219,772

Claims priority, application Great Britain, Jan. 21, 1971, 2,845/71

Int. Cl. B64d *33/04*

U.S. Cl. 239—265.35 8 Claims



An angularly movable exhaust nozzle for a rocket motor having two concentric pairs of spherical mating surfaces provided between a forward portion attached to the motor and the exhaust nozzle, the proximity of the surfaces being such that an annular labyrinth passage is provided between them. There may be sealing means in the passage remote from the inner surface of the nozzle or a shroud surrounding the nozzle and ducting rearward gases escaping from the passage.

The exhaust nozzle may be pivoted to the forward portion by means of a gimbal ring assembly.

3,759,447

FLEXIBLE TUBING FOR THE CONDUCTING OF HOT JET ENGINE GASES

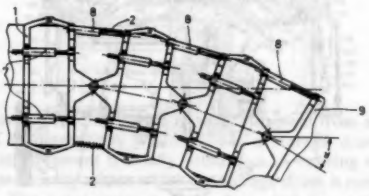
Erich W. Weigmann, Munchen, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed May 28, 1971, Ser. No. 148,010

Claims priority, application Germany, June 8, 1970, P 20 28 067.5

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.35 13 Claims



Flexible conduit for guiding exhaust gases from a jet engine, particularly for aircraft use. Said conduit is intended for attachment to the discharge end of a jet engine for redirecting the flow of propellant gases, as for either braking or attitude control purposes. The conduit in the preferred embodiment comprises a plurality of base rings pivoted to each other on alternately perpendicular axes with a flexible hose of heat-resistant material provided internally of said rings and a protective skin applied externally of said ring. Preferably serially connected hydraulic means are provided between alternately pivoted pairs of rings to provide hydraulic control for pivoting or flexing said conduit as desired.

3,759,448

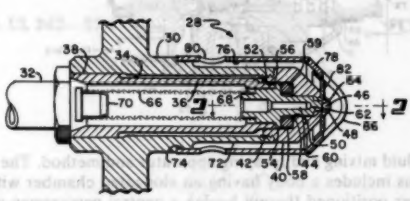
SIMPLIFIED FLAT SPRAY FUEL NOZZLE

Sidney C. Watkins, Bridgeport, Conn., assignor to AVCO Corporation, Stratford, Conn.

Filed Sept. 15, 1972, Ser. No. 289,419

Int. Cl. B05b *1/04*

U.S. Cl. 239—419.5 8 Claims



A flat spray fuel nozzle comprising a generally spherical tip with an elongated fuel discharge slot extending from a spherical chamber. A fuel splitter is adjustably positioned in the chamber, by means of a sleeve-like shim, to divert and reunite fuel at the slot to increase turbulence. An air shroud surrounds the exterior of the tip and has a discharge slot in line with the slot in the tip. A splitter element is positioned in the shroud so that air passing through the shroud is divided into separate streams which impinge on either side of the liquid film adjacent the fuel slot to further increase atomization of the fuel.

3,759,449

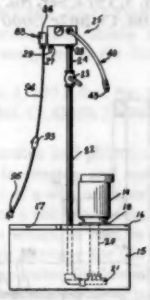
DEVICE FOR PRODUCING COOLANT MIST

Jerome E. Ruthman, Cincinnati, Ohio; William L. Smith, Cold Spring, and Robert A. Forte, Dayton, both of Ky., assignors to The Ruthman Machinery Company, Cincinnati, Ohio

Filed Mar. 4, 1971, Ser. No. 121,023

Int. Cl. B05b *7/24*

U.S. Cl. 239—416.2 12 Claims



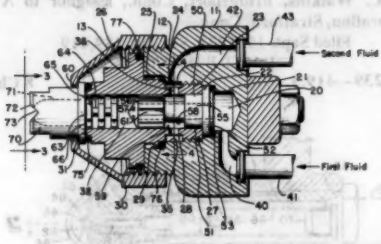
The mechanism herein disclosed provides a coolant mist for machine tools and the like and the intensity of which mist may be changed at the will of the user or operator. The machine tool with which the coolant mist is employed may be performing a drilling, reaming, tapping, grinding and the like operation and the nozzle for delivering coolant to said point of operation is controlled in the form of a stream of coolant, a coolant mist, or a continuous air stream operation. The mist producing mechanism may be readily adjusted for increasing or varying the amount and intensity of the coolant stream, the coolant mist, and the stream of air.

3,759,450

FLUID MIXING AND SPRAYING APPARATUS

Morris Fram, Dunland; Robert D. Hetherington, Sunland, and Craig Freeman, Van Nuys, all of Calif., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Mar. 16, 1972, Ser. No. 235,356
Int. Cl. B05b 7/04
U.S. Cl. 239—427 **4 Claims**



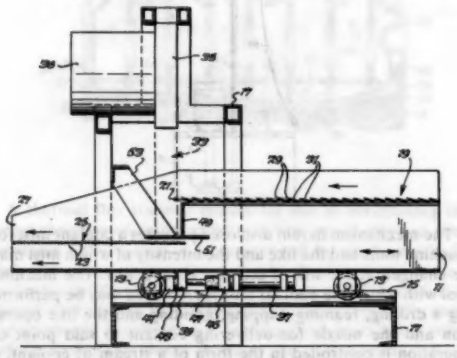
A fluid mixing and spraying apparatus and method. The apparatus includes a body having an elongated chamber with a diffuser positioned therein having a central passageway with an entrance end and an exit end. The diffuser has an end wall at the exit end of the central passageway. The end wall of the diffuser has a plurality of spaced openings to permit a first fluid supplied to the entrance end of the passageway under pressure to exit through the openings into the elongated chamber as a plurality of streams. An intermediate portion of the diffuser has a peripheral recessed portion which defines a distributing chamber for receiving a second fluid under pressure. A plurality of channels formed in the diffuser extend from the recessed portion to the end wall to permit the second fluid in the distributing chamber to exit from the chamber through the channels into the elongated chamber as a plurality of streams to mix with the first fluid. Baffle means also may be provided in the elongated chamber beyond the point where the two fluids first meet and mix to further facilitate mixing of the two fluids prior to their discharge through a fluid spray tip.

3,759,451

APPARATUS FOR GRANULATING MOLDED SAND

Harper W. Good, Waynesboro, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,611
Int. Cl. B02c 19/00
U.S. Cl. 241—77 **12 Claims**



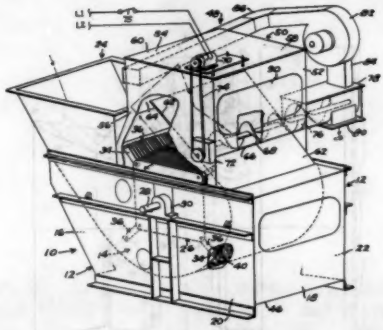
In an apparatus for granulating molded sand, a first conveying surface discharges lumps of molded sand onto a lower conveying surface and into the path of a stream of projected abrasive particles which granulate the lumps of sand.

3,759,452

SELF-CLEANING METAL TRAP FOR RUBBISH SHREDDING MACHINES

James G. Bryant, Greencastle, Ind., assignor to Bryant-Poff, Inc., Coatesville, Ind.

Filed Dec. 22, 1971, Ser. No. 210,667
Int. Cl. B02c 19/00
U.S. Cl. 241—82 **6 Claims**



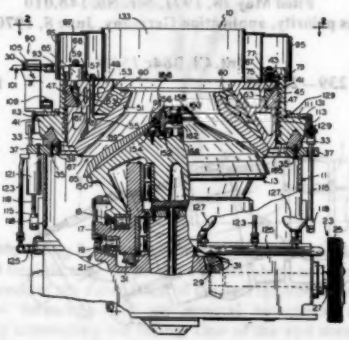
A self-cleaning metal trap is positioned on the shredding machine to remove foreign material from the shredding chamber thereby preventing damage to the shredder. The metal trap is provided with a trough which collects the material ejected from the shredding chamber. A motor-driven conveyor at the bottom of the trough removes the accumulated contents of the trap so that the shredder may be continuously operated for as long as desired.

3,759,453

ROCK CRUSHER

Louis W. Johnson, 3440 Franklin Blvd., Eugene, Oreg.

Filed Dec. 27, 1971, Ser. No. 211,888
Int. Cl. B02c 2/04
U.S. Cl. 241—207 **22 Claims**



A wedging ring carried in a groove in a bowl jams thread segments against a threaded portion of a bowl carrier which is

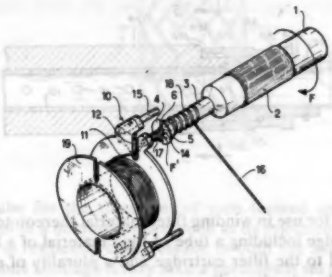
pressed against a hardened ring by a frictional overload clamp. In turning the bowl relative to the bowl carrier, a manual, automatic or partially automatic drive actuates a pawl and ratchet drive. The crusher head supports an annular mantle held by a wedging ring and a self-tightening nut.

3,759,454

DEVICE FOR WINDING CONDUCTOR WIRE ON A PIN

Jean-Pierre Bernard, Phalempin, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed July 21, 1971, Ser. No. 165,244
Claims priority, application France, July 21, 1970, 7026898
Int. Cl. H01f 41/10
U.S. Cl. 242—7.06 2 Claims



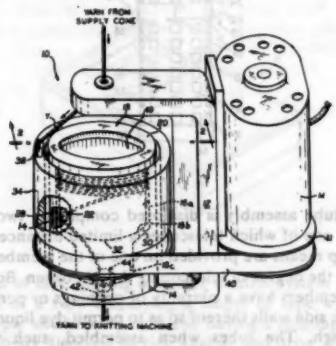
Device for winding a conductor wire on a spindle comprising a cylindrical part whose end has an edge chamfered at 45° and comprises, on the one hand, an axial bore in which the spindle is fitted and, on the other hand, a diametral guide groove so that by rotating the device, the wire is wound simultaneously around the spindle and the cylindrical part.

3,759,455

FILAMENT FEEDING AND STORAGE DEVICE

Robert W. Clemens, Malverne, N.Y., assignor to Wesco Industries Corp., Plainview, N.Y.

Filed Sept. 28, 1972, Ser. No. 293,147
Int. Cl. B65h 51/20
U.S. Cl. 242—47.12 15 Claims



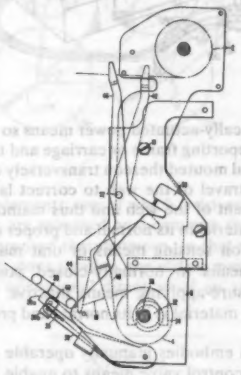
A filament feeding device in which filament from a supply thereof is tangentially wound about a storage drum from which said filament is axially withdrawn. A housing which is fixed has a cavity within which the storage drum is removably seated. The outer contour of the drum and the confronting inner contour of the cavity are matingly shaped so as to define a radial gap therebetween and also so as to prevent significant relative rotation between the drum and the housing whereby the drum is in effect floating within the housing, being unsecured thereto. The filament tangentially wound about the drum forms a plurality of windings which advance axially within the radial gap and is thereafter withdrawn axially through an aperture at the opposite end of the housing. The mating confronting contours of drum and housing may be oval shaped, polygonically shaped, or be shaped in any other noncircular contour which results in preventing relative rotation between the drum and the housing.

3,759,456

RIBBON FEED AND CORRECTION DEVICE FOR A HIGH SPEED PRINTER

Otto F. Moneagle, and Karl Svatek, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1971, Ser. No. 155,925
Int. Cl. B65h 25/26
U.S. Cl. 242—57.1 9 Claims



A ribbon correction device aligns a web by deliberately skewing a pair of pivoted winding spools to steer the ribbon continuously toward a given median point along the axis of a spool. The device automatically compensates for the effect of a change in the direction of rotation of the winding spool, by means of a single sensing device.

3,759,457

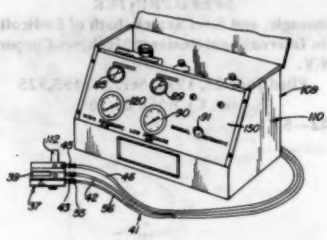
WEB-GUIDING APPARATUS AND POSITION-SENSING AND CONTROL UNIT THEREFOR

Ferenc Edes, Bolingbrook, and Henry L. Gianatasio, River Forest, both of Ill., assignors to Air-Trol Systems, Inc., Addison, Ill.

Filed Dec. 1, 1971, Ser. No. 203,594
Int. Cl. G65h 25/26
U.S. Cl. 242—57.1 16 Claims

A web-guiding apparatus and position-sensing and control unit therefor for use in sensing and maintaining the proper position and alignment of a web of paper or like flexible sheet material unwound from a roll thereof mounted on a web-supporting roll or cylinder which, in turn, is mounted on a movable supporting frame or carriage for use with web-laminating or sheet-laminating apparatus for laminating a first sheet or web of flexible sheet material, such as paper, plastic resinous film, or the like, to a second sheet or web of the same or comparable flexible sheet material, and for similar purposes, such as sensing and maintaining the proper position of an endless belt conveyor. The supporting frame or carriage is movable transversely of the web of sheet material by hydraulically actuated power means which is under the control of pneumatic pressure-applying means so as to maintain proper alignment of the web and its lateral or side marginal edges during movement of the web during the operation of laminating the first web of flexible sheet material to a second web of flexible sheet

material, or when the web is moved for other purposes. The pneumatic pressure-applying means is under the control of air flow control valve means which, in turn, is under the control of pneumatically controlled web-misalignment and position sensing means which senses and is responsive to the normal proper operating position of a marginal or lateral edge portion of the web of flexible sheet material, and to lateral movement thereof during lengthwise movement of the web. The position-sensing means or unit controls the operation of the air flow control valve means for the pneumatic pressure-applying means and actuates the pneumatic pressure-applying means



and the hydraulically-actuated power means so as to move the movable roll-supporting frame or carriage and the roll of flexible sheet material mouted thereon transversely of the long axis or direction of travel of the web to correct lateral misalignment or movement of the web and thus maintain the web of flexible sheet material in its normal and proper operating position. The position sensing means or unit maintains the air flow control means in normally-closed position and the pneumatic pressure-applying means inactive when the web of flexible sheet material is in its normal and proper operating position.

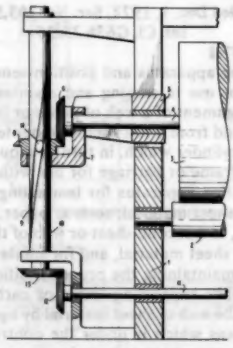
The invention embodies manually operable control means for the air flow control valve means to enable the pneumatic pressure-applying means and the power means to be controlled manually. The position-sensing and control unit may also be used with a web of flexible sheet material having a scalloped, notched or like serrated marginal edge portion and for sensing and maintaining proper alignment of an endless belt conveyor.

3,759,458

WINDING MACHINE

Hermann Thomas, Darmstadt, Germany, assignor to Maschinenfabrik GOEBEL G.m.b.H., Darmstadt, Germany

Filed Mar. 31, 1972, Ser. No. 240,049
Int. Cl. B65h *17/02*
U.S. Cl. 242—67.1 R **1 Claim**



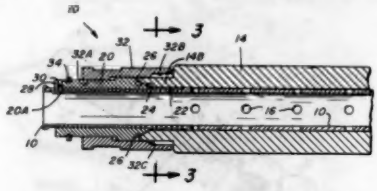
A winding machine for the winding-up of strip band material about a roll, including a grooved shaft disposed perpendicularly with respect to the roll winding axle, and a drive transmitting gear member shiftable along the groove in accordance with the winding axis shift during change in roll diameter, the course of said groove being governed by the angle of the frictional force between the grooved shaft and the gear member occurring during the winding-up of the roll.

3,759,459

MANDREL FOR WINDING MATERIAL THEREON

Howard T. De Graffenreid, Box 261, Inola, and Clifford H. May, 702 S. Muskogee St., Sapulpa, both of Okla.

Filed Jan. 10, 1972, Ser. No. 216,350
Int. Cl. B65h *75/24*
U.S. Cl. 242—72.1 **3 Claims**



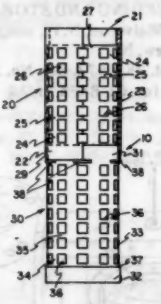
A mandrel for use in winding filter material thereon to form a filter cartridge including a tube of rigid material of a length at least equal to the filter cartridge and a plurality of evenly spaced radially extending ribs.

3,759,460

COLLAPSIBLE YARN DYE TUBE

Frank Fyans, Greenville, S.C., assignor to Fyans' Associates, Inc., Greenville, S.C.

Filed July 1, 1971, Ser. No. 158,729
Int. Cl. B65h *75/10*
U.S. Cl. 242—118.1 **11 Claims**

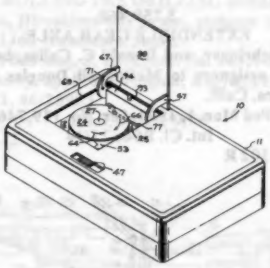


A dye tube assembly is disclosed comprising two tubular members, one of which telescopes a limited distance into the other. Stop means are provided on one of the members to initially limit the degree of telescoping therebetween. Both of the tubular members have a plurality of openings or perforations around the side walls thereof so as to permit dye liquor to pass therethrough. The tubes when assembled, such that one telescopes a small amount into the other, comprise a yarn dye tube around which a package of yarn may be produced. Once the package is produced on a texturing machine or the like, the tube may be placed on a spindle in a dye kettle where the yarn is to be dyed. A tapered spacer is provided between each yarn package on the dye spindle such that upon receiving a force thereon, each dye tube will experience further telescoping to a collapsed condition within the yarn package so as to permit a larger number of packages to be dyed in a single dye kettle.

3,759,461
COLLAPSIBLE DYE TUBE
Ralph M. Draper, Elnora, N.Y., assignor to Albany International Corp., Albany, N.Y.
Filed June 18, 1971, Ser. No. 154,560
Int. Cl. B65h *75/10, 75/18*
U.S. Cl. 242—118.11 8 Claims

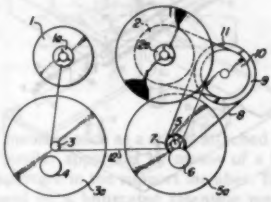
A tube for the treatment of yarn formed on a moldable material in a holding process such as by injection molding and which is resiliently compressible in both the axial and radial directions although it may take a permanent set under certain bath conditions, and which provides a suitable cylindrical surface for yarn wound thereon.

3,759,462
TAPE TRANSPORT APPARATUS WITH END OF TAPE SENSING CONTROL
Mervin L. Falk, Sunnyvale, and Joseph P. Denk, Newark, both of Calif., assignors to Newell Industries Inc., Sunnyvale, Calif.
Filed Aug. 21, 1972, Ser. No. 282,404
Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*
U.S. Cl. 242—186 6 Claims



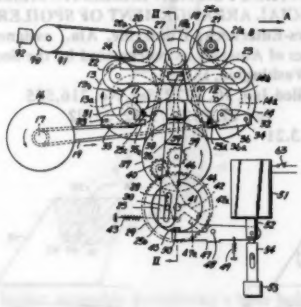
An end of tape sensing interlock control system for a tape transport of a type employing a length of tape wrapped to form supply and take-up rolls and having a rotating, annular, resilient body disposed to ride against and drive the take-up roll includes a rotatable take-up hub, a capstan supported adjacent the hub. An elongate pliable tendon is secured at one end to the capstan and its opposite end to an interlock control part movable between advanced and retracted positions to operate an interlock device. Means for guiding the tendon between the capstan and control part are further provided as well as means responsive to the absence of tape upon the hub acting to couple the capstan to the hub and cause the capstan to wind up the tendon thereon so as to move the control part to operate the interlock device after a predetermined degree of rotation of the capstan. The degree of rotation of the capstan is sufficient to permit withdrawal of tape onto the supply roll before operating the interlock device under movement of the control part so as to insure that the tape has been entirely rewound upon the supply roll before releasing the interlock.

3,759,463
DEVICE FOR DETECTING STOPPAGE OF ROTATION
Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 14, 1970, Ser. No. 97,538
Int. Cl. G11b *15/18, 15/44*
U.S. Cl. 242—186 5 Claims



Two rotary elements, one of which is driven at a higher rate than the other, are mounted on a common shaft and a sliding member is interposed therebetween, so that when one of the rotary elements stops rotating, the sliding member is operated to change the operational direction of an associated equipment.

3,759,464
AUTOMATIC TAPE RUNNING REVERSING APPARATUS FOR USE IN A TAPE RECORDER
Manabu Sato, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa-ken, Japan
Filed Aug. 23, 1971, Ser. No. 174,103
Claims priority, application Japan, Aug. 21, 1970, 45/73283
Int. Cl. B65h *59/39*; G03b *1/04*; G11b *1/52*
U.S. Cl. 242—188 4 Claims

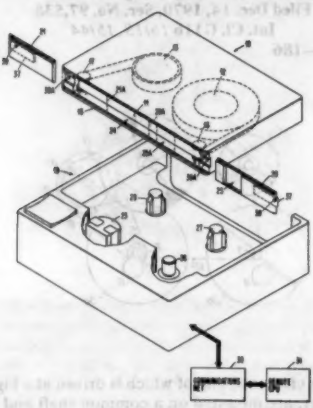


An automatic tape running reversing apparatus for use in a tape recorder comprises means for detecting running of a tape to its terminal end and a mechanism in which one pinch roller is spaced away from one capstan which has been rotated and rotation of one reel disk is stopped responsive to detecting operation of the detecting means, whereas another pinch roller is caused to make pressing contact with another capstan and another reel disk starts its rotation. This mechanism enables the tape to reverse its running direction automatically.

3,759,465
TAPE CONTAINING CASSETTES, EACH WITH A REMOVABLE WALL

Donovan M. Janssen, Boulder; Ernest P. Kollar, Broomfield; Eugene G. Stahlberg, Westminster, and Hui-li Tiao, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 23, 1971, Ser. No. 136,675
Int. Cl. G11b *23/10*
U.S. Cl. 242—199 4 Claims

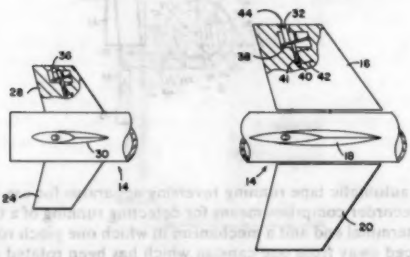


A tape-containing cassette facilitates interchange between low-speed recording systems and high-speed or high-performance recording systems. In a low-performance system, the tape is transported wholly within the cassette. The cassette may be removed from a low-performance player and placed in a high-performance player. Then, the tape is partially removed from the cassette for higher speed transport. A front wall opening of the cassette includes a pair of movable front wall end plates. The end plates partially covering the front wall opening facilitate in-the-cassette tape processing. Moving the two end plates to a nonclosure position clears the entire front wall opening to facilitate removing the tape from the cassette for out-of-the-cassette tape processing.

3,759,466
CRUISE CONTROL FOR NON-BALLISTIC MISSILES BY A SPECIAL ARRANGEMENT OF SPOILERS

Ernst T. Evers-Euterneck, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 10, 1972, Ser. No. 216,555
Int. Cl. F42b *13/32*, *15/02*
U.S. Cl. 244—3.21 1 Claim

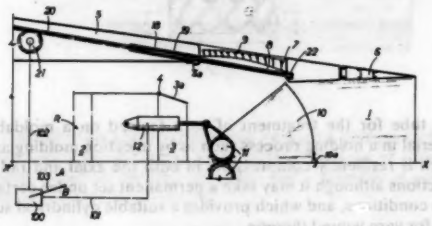


A missile control system for a guided missile wherein spoilers are used for making small corrections in the trajectory of the guided missile during the launch and cruise phase and conventional control surfaces are employed to make large trajectory corrections in the final homing phase of its trajectory. The spoilers are mounted in the extremities of a missile's wing members and tail fins; those mounted in the wing members accomplishing pitch and yaw corrections and those in the tail fins roll corrections. The spoilers are extended and retracted by solenoid devices.

3,759,467
METHOD AND MEANS FOR OPPOSING THE ROTATION OF A WINDMILLING TURBOJET ROTOR DURING FLIGHT

Maurice Jean Clement Roudil, Saint-Maur-des-Fosses, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed July 9, 1970, Ser. No. 53,599
Claims priority, application France, July 10, 1969, 6923492
Int. Cl. B64d *33/04*
U.S. Cl. 244—53 R 27 Claims

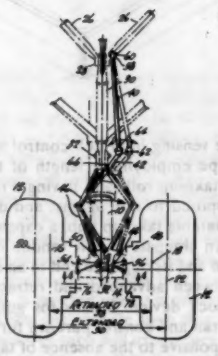


A method and means for opposing the windmilling of the rotor of a turbojet engine on board an aircraft as produced by the incoming stream of air impinging on a disabled turbojet. The windmilling is stopped, in the case of a turbojet engine having a thrust reverser device and a jet-diverting passageway, by moving said thrust reverser device to its thrust reversing position, whereby the flow of air is diverted into said jet-diverting passageway, and throttling said jet-diverting passageway. The jet-diverting passageway may be throttled for this purpose by a mechanical or pneumatic resistance to free flow through such passageway.

3,759,468
EXTENDIBLE GEAR AXLE

Wilfred E. Boehringer, and Donald C. Callas, both of Fullerton, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Mar. 1, 1971, Ser. No. 119,746
Int. Cl. B64c *25/14*
U.S. Cl. 244—102 R 8 Claims



An extendible axle to provide for increase aircraft gross weight without increasing gear stowage area or runway

concrete stresses. Spacing between tires increases when the gear is down and decreases when stowed within the aircraft wheel well.

3,759,469

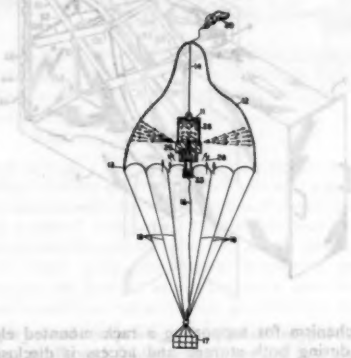
PARACHUTE ARRANGEMENT

Osyp Nimylowycz, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 6, 1972, Ser. No. 303,897

Int. Cl. B64d *17/00*

U.S. Cl. 244—149 **4 Claims**



A parachute arrangement having a hydraulic parachute spreader positioned internally of the canopy skirt and connected at one end by a lanyard to the canopy apex. An initiator firing pin mounted in the lower end of the spreader is connected by a firing lanyard to a load when deployed, such that upon operation of the drogue chute the initiator will ignite a propellant charge in the spreader to eject liquid coolant through peripherally spaced lateral orifices in the spreader sidewall against the skirt to facilitate a quick opening thereof.

3,759,470

ROCK DRILL SUPPORTING DEVICE FOR CONTROLLING THE DRILLING DIRECTION

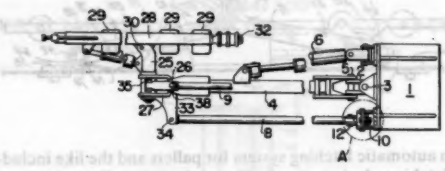
Toru Kawano, Hiroshima-shi, Japan, assignor to Toyo Kogyo Company, Ltd., Hiroshima, Japan

Filed Aug. 5, 1971, Ser. No. 169,446

Claims priority, application Japan, Aug. 5, 1970, 45/78381; Mar. 31, 1971, 46/23953

Int. Cl. E21c *9/00*

U.S. Cl. 248—2 **12 Claims**



A supporting device for a rock drill where the rock drill is mounted slidably on a guide cell supported rotatably at the top of a boom mounted swingably on a base. The boom forms a parallel link mechanism with a link disposed in parallel with the boom, whereby the guide cell moves in response to swinging of the boom while being maintained in parallel with the boom. At least one of two opposing latera interconnecting the boom and the link of the parallel link mechanism is variable in length. The guide cell inclines in response to swinging of the boom when the length of the latus on the top side of the boom is made longer than that of the other latus on the base side.

3,759,471

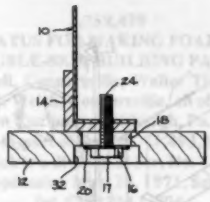
QUICK-RELEASE SUPPORT MEMBER ATTACHMENT MEANS

George T. Sholtes, Fern Creek, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 15, 1971, Ser. No. 198,608

Int. Cl. F16b *41/00*

U.S. Cl. 248—119 R **6 Claims**



A support member such as a skid is attached to a frame of a machine or similar apparatus by means of a bolt extending through an aperture in the support member. The head of the bolt is engaged by a bifurcated retention means, the outer dimension of which is greater than the corresponding aperture dimension. The skid is readily released from the supported machine with minimum time and effort by manually applying sufficient force to the support member in a direction generally away from the frame, thereby deforming and reducing the outer dimension of the retention means and allowing it and the bolt head to pass through the aperture in the support member.

3,759,472

TOOL HOLDER ASSEMBLY

Peter J. Fratta, 9127 Alcona St., Lanham, Md.

Filed Mar. 22, 1972, Ser. No. 237,183

Int. Cl. F16m *13/02*

U.S. Cl. 248—201 **5 Claims**

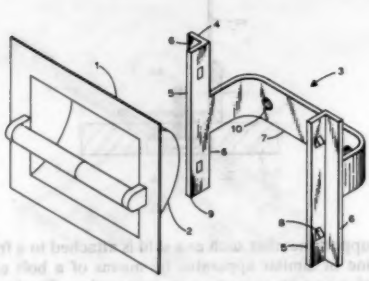
A tool holder assembly comprising a base holder and upper receiving member adapted to be releasably mounted in spaced relation on the boom of a truck or crane body, with a bucket or personnel carrier being attached to the free end of the boom for carrying out necessary repairs to utility lines and the like. The base holder has mounted therein a spring which can be depressed by a "hot stick" or the like used in making the necessary repairs. The upper receiving member or holder is formed to receive the upper end of the stick when the same has been properly oriented with the upper receiver. When released, the spring biases the stick into the upper holder to releasably retain the stick in the tool holder assembly.

3,759,473

CLAMP FOR WALL MOUNTING OF BATHROOM ACCESSORIES

Frank F. Sosaya, deceased, late of 2820 La Junta St., P.O. Box 1811, Santa Fe, N. Mex. (Dolores P. Sosaya, executrix)

Filed May 3, 1971, Ser. No. 139,755
Int. Cl. H02g 3/08
U.S. Cl. 248—205 R 5 Claims



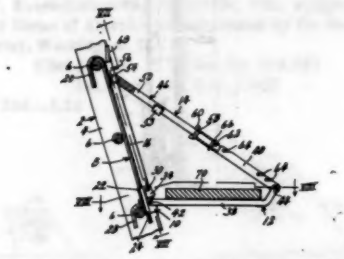
A clamp for fastening in the bathroom wall accessories such as a toilet paper holder, a soap holder, a soap-and-grab, or a toothbrush holder. An H-frame of rigid material including a crossbeam is fitted into the bathroom construction wall or wallboard panel from the back side of the wall. A crossbeam with threaded studs is anchored by cement or mortar in a masonry wall. The crossbeam in either case is removably fastened to a single type of accessory receptacle and is secured to the bathroom wall.

3,759,474

LADDER JACK

Walter E. Narkie, 126 W. 5th St., Kansas City, Mo.

Filed July 21, 1971, Ser. No. 164,563
Int. Cl. F16m 13/00
U.S. Cl. 248—238 7 Claims



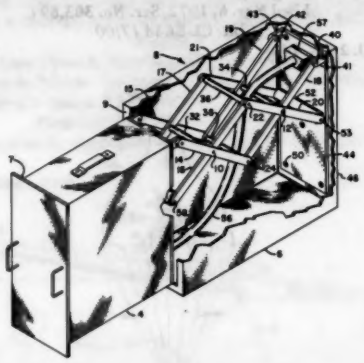
A ladder jack consisting of a beam having a hook at one end engageable over a ladder rung and adapted to support a scaffold plank thereon, a link pivoted at one end to the opposite end of the beam, a hook at the opposite end of said link engageable over a relatively higher rung of the ladder, the link being adjustable in length to level the beam in various positions of use, and a connection joining the hook ends of the beam and link to permit limited free relative movement therebetween.

3,759,475

RACK MOUNTED ELECTRONIC MODULE SUPPORT MECHANISM

Ralph A. Brown, Bountiful, Utah, assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,083
Int. Cl. F16m 13/00
U.S. Cl. 248—277 4 Claims



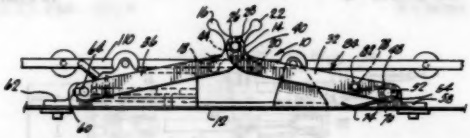
A mechanism for supporting a rack mounted electronic module during both storage and access is disclosed. The mechanism includes side-by-side pais of scissor-like two-bar linkages. Each of the front and rear ends of the mechanism includes four pivot points: on the rear end of the mechanism the two top pivot points are pivotally coupled to the rear of the rack while the two bottom pivot points support a rolling member that rolls vertically along the rack rear wall; on the front end of the mechanism the two top pivot points are pivotally coupled to the rear of the module while the two bottom pivot points support a rolling member that rolls vertically along the module rear wall.

3,759,476

LATCHING SYSTEM

Walter H. Goodwin, Sierra Madre, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Feb. 18, 1972, Ser. No. 227,416
Int. Cl. B65d 19/38
U.S. Cl. 248—361 R 8 Claims



An automatic latching system for pallets and the like including latching devices, each arranged so a pallet can move thereover to depress an upwardly biased star wheel until a pallet is positioned on one or both sides of the latching device, at which time the spokes of the upwardly extended star wheel hold and restrain the pallets from vertical and horizontal movement.

ERRATUM

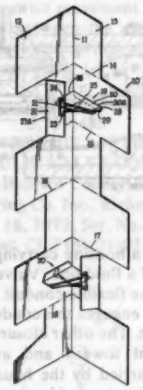
For Class 248—449 see:
Patent No. 3,759,482

3,759,477

DISPLAY STANDS

John Hird, London, England, assignor to Graphic Trend Associates Ltd., London, England

Filed Aug. 3, 1970, Ser. No. 60,513
Int. Cl. A47g *1/16*
U.S. Cl. 248—459 11 Claims



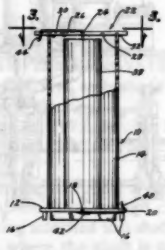
A display stand comprising a sheet of self supporting material, such as cardboard, folded about a vertical fold line into two panels, which can be hinged from the flat towards one another, and about at least two transverse fold lines so that the sheet can be packed flat in concertina fashion. At least one spring loaded link is provided between two of the transverse fold lines and comprises a leaf hinged to the rear face of one of the panels about a line parallel to the vertical fold line, a flap hinged to the rear face of the other panel and resilient means connecting the leaf and the flap so as to permanently urge the two panels together. The two panels can be opened into the flat, the leaf and the flap laid flat against the rear faces of the one panel and the other panel respectively and the stand then folded concertina fashion about the transverse lines. When released the resilient means causes the two panels to snap open into a rigid self supporting structure by drawing the flap away from the rear face of the other panel and simultaneously drawing the two panels together.

3,759,478

CANDLE MOLD

Hugh A. Schmitt, and Maxine F. Schmitt, both of 8707 N. 36th, Omaha, Nebr.

Filed Apr. 5, 1972, Ser. No. 241,371
Int. Cl. C11c *5/00*
U.S. Cl. 249—93 8 Claims



A candle mold comprising a flat base having a transparent cylinder extending upwardly therefrom. The transparent cylinder is adapted to receive a previously molded inner candle core therein which has a smaller diameter than the cylinder. The flat base has a central opening formed therein to permit the wick of the inner candle core to be extended downwardly therethrough. The flat base also has means thereon for securing the wick thereto. A wick holder bar is detachably secured to and extends across the upper end of the cylinder. The bar has a central opening formed therein which receives the upper end of the wick of the inner candle core. The bar also has means thereon for permitting the wick to be secured thereto.

3,759,479

MOLD APPARATUS FOR MAKING FOAMED-IN-PLACE DOUBLE-SKIN BUILDING PANEL

Norbert C. Howell, Connersville; Walter Tischuk, Richmond, and Thomas M. Welsh, Connersville, all of Ind., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 71,493, Sept. 11, 1970, abandoned, which is a division of Ser. No. 732,689, May 28, 1968. This application Mar. 24, 1971, Ser. No. 127,615
Int. Cl. B22d *19/04*
U.S. Cl. 249—95 20 Claims

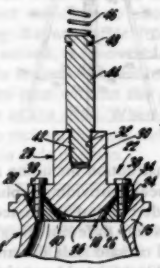
Mold apparatus for making a double-skin construction panel of the type having spaced-apart inner and outer facing sheets and a foamed-in-place core filling the space between the facing sheets. The mold apparatus includes upper and lower mold platens which when assembled, present confronting, laterally offset, upper and lower U-shaped cavities. The cavities are adapted to receive the complementary facing sheets and to position them in fixed, juxtaposed, laterally offset relation.

3,759,480

TWO-PIECE PLUG FOR ROTATIONAL CASTING PROCESS FOR FORMING SUCTION CUP INTEGRAL WITH THE MOLDED ARTICLE

Barrie J. Stier, Brooklyn; Peter J. Ferrara, Rego Park, and Ivan Klobas, New York, all of N.Y., assignors to said Antoinette Catalano, by said Ferrara, Middle Village, N.Y.

Filed Apr. 26, 1971, Ser. No. 137,449
Int. Cl. B29c *1/14*
U.S. Cl. 249—142 2 Claims



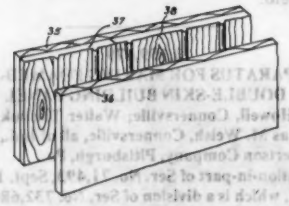
A method of casting an article such as a toy in which a suction cup is integrally formed with the cast article. Also disclosed is a novel mold closure for use in a rotational casting operation to form the integral suction cup on the article.

3,759,481

MULTIPLE USE CONCRETE FORM LINER

Sam C. Scott, 2519 Walnut St., Denver, Colo.

Continuation-in-part of Ser. No. 17,423, March 9, 1970, abandoned. This application Jan. 4, 1972, Ser. No. 215,370
Int. Cl. E04g 9/10
U.S. Cl. 249—189 9 Claims



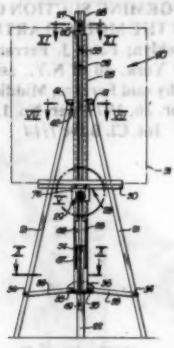
A multiple use, flexible, elastomeric liner for forms for concrete faced walls prepared by having a series of rigid panels in side by side relation, includes panels of liners for rigid panels having a concrete contacting face of a flexible, elastomeric synthetic polymer used throughout as a negative mold of a desired design in the finished concrete and having an opposed planar surface for face engagement with the form panels. The liner panels will not support the concrete for the wall without the backing panels. The elastomeric liner is a soft, flexible, resilient, elastomeric synthetic polymeric material which permits sharp relief designs having undercuts, and in edge engagement with similar panels squeeze together for a seamless surface in the completed concrete while leaving the impression of itself in exact detail in the hardened concrete.

3,759,482

ADJUSTABLE EASEL CONSTRUCTION

Earl R. Wright, 8124 Victoria Ave., South Gate, Calif.

Filed Dec. 6, 1971, Ser. No. 204,982
Int. Cl. A47b 97/08
U.S. Cl. 248—449 8 Claims



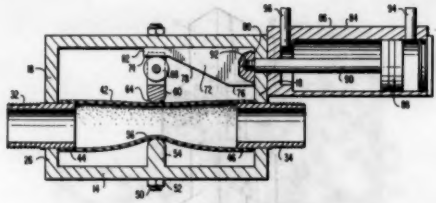
A tripod easel construction including a central upstanding support and guide means providing a plurality of way means for a work holder slide bar and associated securement means whereby workpieces of different height may be readily secured and retained on said slide bar and said workpiece so retained may be readily adjusted to a selected working or display height. An easel construction having an arrangement of easel legs and upstanding support and guide means and associated slide work holder bar and securement means therefor which is readily adjusted as to height, working angle, and which may be readily collapsed and erected.

3,759,483

FLUID ACTUATED CONTROL VALVE

Thomas D. Baxter, 946 Salisbury Ct., Lancaster, Pa.

Filed May 14, 1971, Ser. No. 143,468
Int. Cl. F16k 7/06
U.S. Cl. 251—5 1 Claim



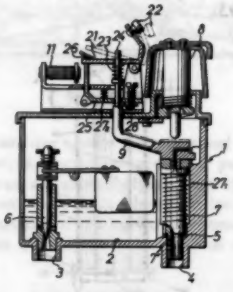
The valve includes a housing carrying a flexible fluid conduit forming a part of a fluid line. Valve closure members lie on opposite sides of the flexible conduit. One closure member is fixed and normally engages the conduit flexing it inwardly short of its central axis. The other closure member is mounted for sliding movement toward and away from the fixed member. A cam is carried by the housing for reciprocating movement, a roller being carried by the movable valve closure member in engagement with the cam. A fluid control cylinder selectively reciprocates the cam. In one cam position, the flexible fluid conduit is open. In moving from the one to a second cam position under control of the fluid cylinder, the movable closure member slides toward the fixed closure member to pinch the walls of the flexible conduit together and against the fixed closure member thereby closing the valve. The cam includes a flat which engages the roller on the movable closure member to maintain the valve closed notwithstanding failure of the pressure fluid in the fluid control cylinder. In one form, the flexible conduit includes diametrically opposed inwardly projecting seats having arcuate surfaces. The movable closure member has like surfaces. The surfaces are configured to preclude fatigue or failure of the conduit.

3,759,484

FLUID CONTROL DEVICE

Takehisa Hirano, Tokyo, Japan, assignor to Kabushiki Kaisha Keihinseiki Seisa, Kanagawa-ken, Japan

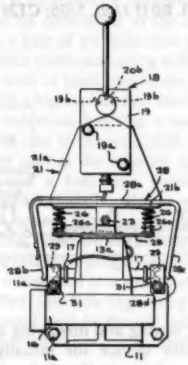
Filed Mar. 16, 1972, Ser. No. 235,364
Int. Cl. F16k 31/44
U.S. Cl. 251—67 7 Claims



A fluid control device is comprised of a control valve interposed on a fluid way to control the amount of fluid to be supplied or to be discharged which is being able to take three

positions of itself respectively for full open condition, partial open condition and shut up condition, a reset member for keeping the control valve at its shut up position, an electric operation means for making the reset member unoperative whereby the control valve is set at its full open position, and means for keeping the control valve at its partial open position when both the reset member and the electric operation means are unoperative features, and said electric operation means preferably contains at least an electric source, an electromagnet which mediately restrict movement of the reset member and an electric circuit between the electric source and the electromagnet having a control switch which operates according to predetermined condition.

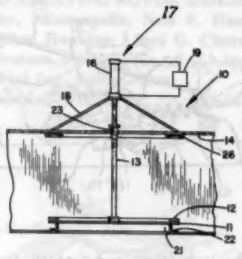
3,759,485
MANUAL OVERRIDE APPARATUS FOR ELECTROHYDRAULIC VALVE CONTROL STATION
Francis Duncan Mills, Henrico County, Va., assignor to Baker Equipment Engineering Co. Inc., Richmond, Va.
Filed July 18, 1972, Ser. No. 273,028
Int. Cl. F16k *31/05*
U.S. Cl. 251—130 **12 Claims**



Manual override apparatus for a proportional electrohydraulic control valve having mechanical override pushbuttons and an electric control unit therefor having a pivoted operating handle or lever, the apparatus including a bracket pivotally mounted on the body of the central valve and supporting the control unit for resiliently opposed movement about a pivot axis from a normal position. The control unit is fixed to the bracket, and a U-shaped plunger bar also fixed to the bracket has depending legs terminating outwardly adjacent the pushbuttons to actuate one of the pushbuttons when the control unit handle is tilted through such a range of movement as to cause tilting of the bracket.

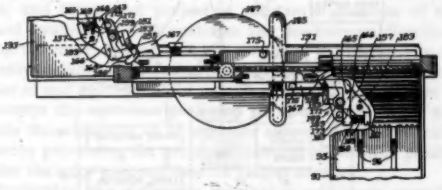
3,759,486
DAMPER SEAL SYSTEM
John Thomas, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed May 26, 1972, Ser. No. 257,085
Int. Cl. F16k *1/44*
U.S. Cl. 251—330 **5 Claims**

A damper arrangement including a damper blade within a flow-through conduit which opens and closes a port therein, the damper blade being attached to a shaft which extends outside of the conduit, where the shaft is connected to a drive system for imparting motion thereto, the shaft being sealed at its point of exit through the conduit wall by a packing gland, the packing gland being isolated from fluid pressure within the conduit by a compressible gasket wall means disposed intermediate the inner face of the conduit and the face of the damper blade opposite the port to surround the packing gland



and form a sealed chamber therearound with the damper blade when the damper is fully opened.

3,759,487
STACKED MIXED SLIDE GATE MECHANISM
Frank C. Badalich, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed May 10, 1971, Ser. No. 141,619
Int. Cl. Go3b *23/00*
U.S. Cl. 353—104 **12 Claims**

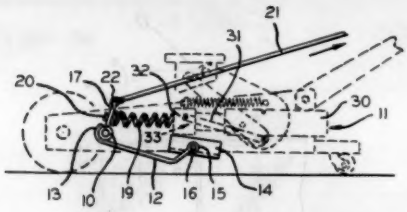


A stacked mixed slide gate mechanism for use in a slide projector to allow the projector to move slides of varying thicknesses through the projection axis is described. The slides are stacked in a slide supply tray and received by a slide storage tray. The slides are "pressed" against the front of each tray by a spring-pressure pad arrangement. Located adjacent to the front of each tray is a moveable gate. In normal operation, the gate is spaced from the slide movement path by a predetermined amount sufficient to allow a "thin" slide to pass while preventing the next slide from passing. When a "thick" slide is to be moved, the moveable gate opens to a detent position. The gate becomes locked in this position and allows the thick slide to pass without the gate rubbing on the photographic surface of the slide. When the slide movement mechanism returns to pick up the next slide, it returns the gate to the "normal" or thin slide position.

3,759,488
SAFETY CATCH FOR HYDRAULIC JACKS FOR AUTOMOBILES
Paul Lukas, 3815 E. Layton Ave., Cudahy, Wis.
Filed Dec. 16, 1971, Ser. No. 208,595
Int. Cl. B60p *1/48*
U.S. Cl. 254—8 R **5 Claims**

A rolling hydraulic auto jack has a shaft which telescopes to raise and lower an auto. The invention provides a metal chan-

nel or block which fits around the shaft to preclude a telescoping retraction thereof. This channel or block is a safety stop



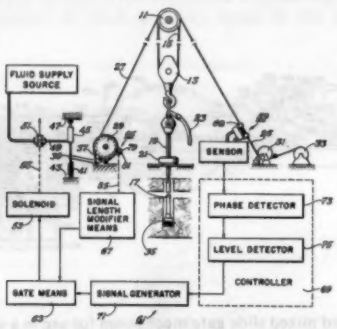
which keeps the jack from inadvertently lowering the auto, even if the hydraulic system fails.

3,759,489

APPARATUS FOR AUTOMATICALLY CONTROLLING WEIGHT-ON-BIT

Harry C. Jones, Dallas, Tex., assignor to Pat & Chuck Oil Well Equipment, Inc., Fort Worth, Tex.

Filed May 7, 1971, Ser. No. 141,157
Int. Cl. B66d *1/48*
U.S. Cl. 254—173 R **6 Claims**



Apparatus for automatically controlling the weight on a rotary drilling bit, including cable drum, drum rotation monitor, deadline sensor, brake for the drum, brake actuator, and brake release, and characterized by the improvement of a gate for passing and stopping a brake release signal; a brake release signal generator for generating a brake release signal responsive to excessive tensional force in the cable deadline; and signal length modifier connected with the drum rotation monitor and the gate for stopping passage of the brake release signal responsive to rotation of the cable drum. Two specific embodiments are also described.

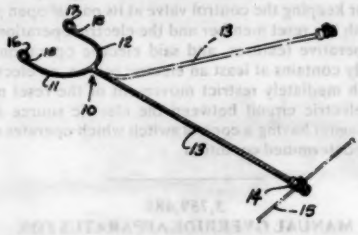
3,759,490

ELECTRIC FENCE EXTENDER

Clarence A. Heuberger, Sheffield, Iowa

Filed Apr. 25, 1972, Ser. No. 247,309
Int. Cl. E04h *17/06*
U.S. Cl. 256—10 **6 Claims**

The present disclosure is directed to a stand-off device which may be coupled to an already existing fence with out requiring tools for installation or removal for purposes of running an electrically charged wire at a spaced point inside the fence perimeter to keep livestock from approaching and laying against the fence to break it down. The extender is a substantially Y shaped member having fence attaching eyes at



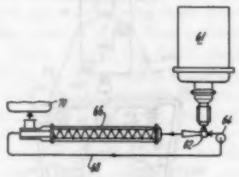
the free ends of the arms and an insulator at the free end of the elongated leg member of the Y-shape.

3,759,491

DISSOLVER FOR SOLID AND LIQUID MATERIALS

Anton Pfeuffer, New York, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,744
Int. Cl. B01f *1/00, 5/06*; C13f *3/00*
U.S. Cl. 259—4 **2 Claims**



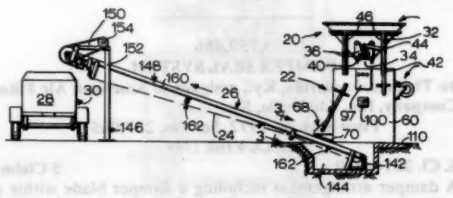
An apparatus for mixing and dissolving a solid in a solvent comprises an injector device for initially mixing the two materials together, and a centrifugal dissolver comprising an helical dflector and a cylindrical screen, for receiving the initial mixture and thoroughly dissolving the solid in the solvent.

3,759,492

CONCRETE MIXING SYSTEM

Jack F. Hall, Vancouver, Wash., assignor to U-Cart Concrete Systems Inc., Vancouver, Wash.

Filed Oct. 28, 1971, Ser. No. 193,478
Int. Cl. B28c *7/16*
U.S. Cl. 259—169 **9 Claims**



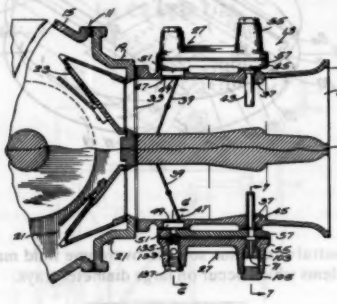
A mixer receives dry mix from a detachable hopper, and has adjustable, wiping paddles which push the mix through an opening to a spout having a U-shaped sealing strip engaging a conveyor belt driven by a takeup pulley biased by gravity and compression springs.

3,759,493

FUEL FEED SYSTEM

Clarence E. Blanchard, Kenosha, Wis.; Robert K. Turner, Waukegan, and Chester DuBois, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed July 20, 1972, Ser. No. 273,377
Int. Cl. F02m 9/06
U.S. Cl. 261—23 A 12 Claims



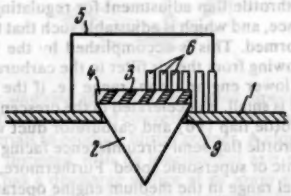
Disclosed herein is a carburetor comprising an air induction housing adapted to be connected to the crankcase of an engine and including a pair of air induction passages, a separate high speed fuel nozzle communicating with each of the induction passages and with at least one of the high speed nozzles communicating with a high speed fuel inlet port at the exterior surface of the air induction housing, a low speed fuel nozzle communicating with one of the induction passages and with a low speed fuel inlet port at the exterior surface of the air induction housing, and a fuel feed housing adapted to be mounted on the air induction housing in overlying relation to the high and low speed inlet ports and including a first diaphragm controlled, fuel flow regulating valve communicating with the high speed inlet port in the air induction housing and adapted to be connected to a source of fuel, and a second diaphragm controlled, fuel flow regulating valve communicating with the low speed port in the air induction housing and adapted to be connected to a source of fuel.

3,759,494

VALVE PLATE OF COLUMN STILL

Lev Samuilovich Axelrod, Michurinsky prospekt, 18, korpus 2, kv. 51; Alexandr Vasilievich Akatov, ulitsa Scherbakovskya, 5, kv. 13; Valery Mikhailovich Rudenko, Kutuzovsky prospekt, 18, kv. 4; Viktor Viktorovich Fedorov, Banny pereulok, 4, kv. 89; Ruslan Yakovlevich Barashkov, Bezbozhny pereulok, 13, korpus 17, kv. 4, all of Moscow, and Boleslav Iosifovich Garbuzovsky, ulitsa Maluntseva, 17a, kv. 6, Omsk, all of U.S.S.R.

Filed July 21, 1971, Ser. No. 164,579
Int. Cl. B01f 3/04
U.S. Cl. 261—79 A 2 Claims



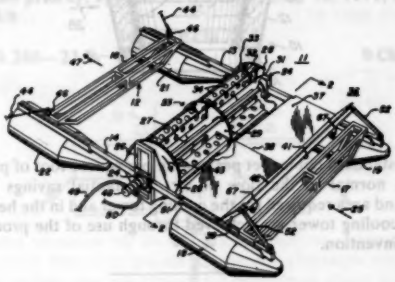
A valve plate of a column still for mass transfer between gas and liquid wherein the valves are shaped like cones with their apices pointing down and the side surfaces of said valves have grooves for rotating the valves by the force of the gas flowing through said valves. Installed above the valves are the valve lift checks.

3,759,495

LIQUID AERATING ROTOR ASSEMBLY

Leonard J. Boler, Minneapolis; Nels S. Hanssen, Mound; Bryan J. Beaulieu, Hopkins; Lloyd G. Cherne, Edina, and Halvor O. Halvorson, Minneapolis, all of Minn., assignors to Cherne Industrial, Inc., Edina, Minn.

Filed May 3, 1971, Ser. No. 139,557
Int. Cl. B01f 3/04
U.S. Cl. 261—92 26 Claims



A liquid aerating and mixing rotor assembly suitable for sewage treatment in an aerobic bacterial activated sludge process includes a supporting frame mounted on floats or rigid supports. A rotor member is supported on the frame for rotation around a horizontal axis. It includes rotor surfaces for engaging the liquid, urging the liquid in a downstream direction along a path extending perpendicularly away from the rotor axis, and lifting and projecting substantial portions of the liquid upwardly in both upstream and downstream directions from the rotor, for aeration and mixing of the liquid. The assembly includes a deflecting member supported on the frame close to and upstream from the rotor member in a position to intercept the upstream projected portions of the liquid and guide them laterally to at least one side of the desired path, thereby preventing the projected liquid portions from passing under the rotor a second time for further aeration.

Preferably, the deflecting member is selectively movable from its lateral-deflecting position to a second position in which the liquid portions projected in an upstream direction can be passed beneath or into the rotor a second time for selective additional aeration. In a third position of the deflecting member, it may provide a lifting frame for engagement by a suitable lifting device to move the assembly from one position to another.

The rotor member for the assembly preferably includes a plurality of paddle-like surfaces extending radially from the rotor axis, with the outer edges of the surfaces inclined forwardly in the direction of rotation of the rotor to assist in retaining liquid on the rotor surface for projection of substantial quantities of liquid both upwardly and in an upstream direction for better aeration. Suitable openings in the paddle surfaces, with the locations of such openings in staggered relation in successive rotor surfaces, provide increased turbulence and greater aeration.

3,759,496

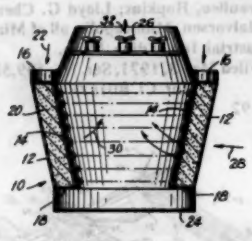
PROCESS FOR COOLING LIQUIDS BY CROSS CURRENT CONTACT WITH GASES

Aaron J. Teller, Great Neck, N.Y., assignor to Teller Environmental Systems, Inc., New York, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,366
Int. Cl. B01f 3/04
U.S. Cl. 261—94 5 Claims

A process for cooling water by cross-current contact with air is shown. The contact operation takes place in an inverted,

frusto-conical, annular enclosure packed with a packing such as Tellerettes. The water loading is preferably from 3 to 30 gallons per minute per square foot of packing area in the plane normal to the flow of water and the air loading is from 200 to



800 standard cubic feet per minute per square foot of packing area normal to the flow of air. Substantial savings in the ground area required for the cooling tower and in the height of the cooling tower are achieved through use of the process of this invention.

3,759,497

IMPINGEMENT BAFFLE PLATE ASSEMBLIES

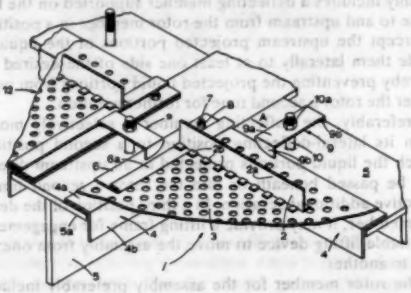
Bernard Black, Stanmore, England, assignor to Swemco Limited, London, England

Filed June 15, 1971, Ser. No. 153,202

Claims priority, application Great Britain, June 15, 1970, 28,785/70

Int. Cl. B01f *3/04*

U.S. Cl. 261—113 **2 Claims**



An impingement baffle plate assembly in a scrubber tower comprises a plurality of impingement baffles mounted above a perforated plate. A peripheral frame lies beneath the perforated plate and forms part of the assembly, which is releasably mounted in the scrubber tower. The peripheral frame ensures flatness of the assembly so that the means fixing the assembly in the tower may be simplified and adapted for quick release of the assembly for repair or replacement.

3,759,498

LIQUID-GAS CONTACT TRAY

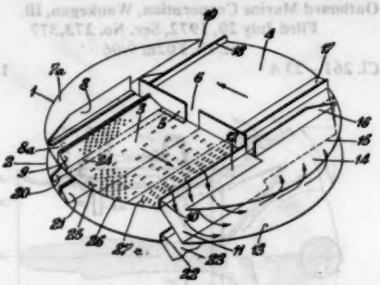
Ladislas C. Matsch, Amherst, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,676

Int. Cl. B01f *3/04*

U.S. Cl. 261—114 JP **10 Claims**

A slotted sieve tray in which the slot density varies across the active surface and the slots are oriented with respect to the tray diametral streamline so as to overcome fluid maldistribution problems which occur on large diameter trays.



3,759,499

DECONTAMINATION OF INTERNAL COMBUSTION ENGINE EXHAUST GASES AND DEVICES FOR THE IMPLEMENTATION OF THE PROCEDURES

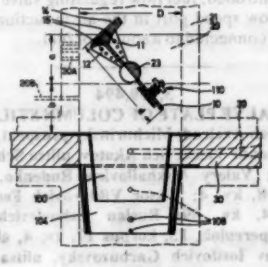
Ludwig G. Lang, Darmstadt, Germany, assignor to Ingenieuburo Fur Angewandte Physik und Chemie, Darmstadt, Germany

Filed June 30, 1970, Ser. No. 51,163

Claims priority, application Austria, July 3, 1969, 6390/69; Aug. 6, 1969, 7589/69; Nov. 10, 1969, 10547/69

Int. Cl. F02m *23/02*

U.S. Cl. 261—41 D **24 Claims**



Apparatus for decontamination of internal combustion engine exhaust gases by the preparation of a flammable and ignitable air-fuel mixture with a variable air ratio figure λ by means of a throttle flap adjustment for regulating the fuel jet flow resistance, and which is adjustable such that fuel atomization is performed. This is accomplished by the fact that the airstream flowing from the air filter to the carburetor, particularly in the lower engine r.p.m. range i.e. if the throttle flap swivel range is small, is accelerated in the crescent-shaped gap between throttle flap (**10**) and carburetor duct wall (**20**), on the whole throttle flap semi-circumference facing the fuel jets, to nearly sonic or supersonic speed. Furthermore, at the throttle flap swivel range in the medium engine operating range at subsonic speed, the air stream flowing from the air filter to the carburetor is additionally accelerated by further jet effect, whereas the airstream from the air filter to the carburetor in the operating range up to full engine load is homogenized by very intensive elimination of the turbulence.

3,759,500

PLANT FOR THE TREATMENT AND THE OXIDATION OF ANTIMONY MINERALS

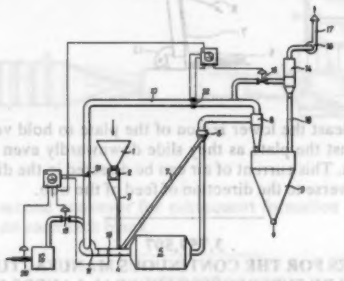
Nerio Nerozzi, Rome, Italy, assignor to AMMI S.p.A., Rome, Italy

Division of Ser. No. 144,179, May 17, 1971. This application Sept. 13, 1972, Ser. No. 288,538

Claims priority, application Italy, May 29, 1970, 51024 A/70; Jan. 23, 1971, 47925 A/71

Int. Cl. C22b *1/12*

U.S. Cl. 266—9 6 Claims



Plant for the treatment and the oxidation of antimony minerals, wherein an antimony mineral with any granulometry and humidity, eventually crushed, is carried by a hot gaseous stream, subjected to milling, drying, subsequent separations and then introduced in a rotary kiln in a state of extreme subdivision and oxidized dispersed in a gaseous compressed oxidizing stream.

3,759,501

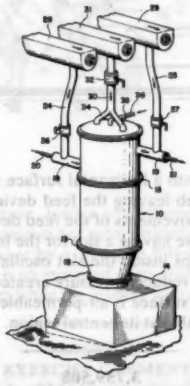
CYCLONIC SMELTING APPARATUS

James E. Foard, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,042

Int. Cl. F27b *15/00*

U.S. Cl. 266—10 11 Claims



A cyclonic smelting apparatus developed especially for carrying out both smelting and converting operations on copper-bearing materials to produce blister copper. A closed cylindrical vessel is disposed with its longitudinal axis substantially vertical and has a discharge orifice at its lower end. At least one means is provided for injecting tangentially into the vessel a pressurized stream of particulate copper-bearing material and an oxygen-containing gas, so that a vortical flow of such stream takes place within the vessel toward the discharge orifice. At least one means is also provided for introducing a stream of copper-bearing material and an oxygen-containing gas downwardly into the vessel along the axis thereof, so there is comingling of the tangentially injected and the axially introduced materials. Heating means are provided for raising the temperature within the vessel sufficiently to induce autogeneous or partially autogeneous smelting reactions.

3,759,502

METHOD AND APPARATUS FOR PREVENTING RELATIVE MOTIONS

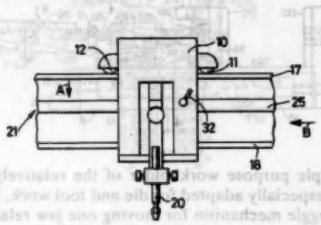
George Roeder, Frankfurt/Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed June 19, 1972, Ser. No. 264,042

Claims priority, application Germany, June 18, 1971, P 21 30 144.0

Int. Cl. B23k *7/10*

U.S. Cl. 266—23 E 9 Claims



A method for preventing the relative movement beyond a predetermined magnitude between a driving band set in motion by a driving motor and between a device, such as a torch, clamped on the band and adapted to carry operating instruments thereon, wherein the relative movement arising between the band and the operating device clamped thereon, is secured and signals are fed for stopping the driving motor of the band upon said relative movement exceeding a predetermined magnitude. The invention also discloses a torch cutting apparatus comprising a driving motor, a metal band coupled to the driving motor and adapted to move in a predetermined path, an upper carriage carrying a torch cutting device, an arrangement for clamping the upper carriage onto the band at a predetermined point according to the pattern to be cut, means for sensing a relative movement between the band and the upper carriage and developing a signal when the relative movement exceeds a predetermined magnitude, and an arrangement responsive to the signal and causing a turning off of the driving motor.

3,759,503

RESILIENT MOUNTING ARRANGEMENT

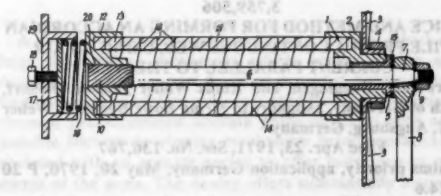
John Russell Crompton Moore, Little Melton, Norwich, England

Filed May 27, 1971, Ser. No. 147,385

Claims priority, application Great Britain, May 28, 1970, 25,853/70

Int. Cl. B60g *11/18*

U.S. Cl. 267—58 14 Claims



A resilient mounting arrangement has differential damping and comprises a helical spring under axial compression so that

turns of the spring are frictionally coupled. The ends of the spring are coupled to respective relatively rotatable members. Preferably, one of the members is coupled to the associated end of the spring through inclined splines which allow relative rotation between that one member and the associated end of the spring.

3,759,504

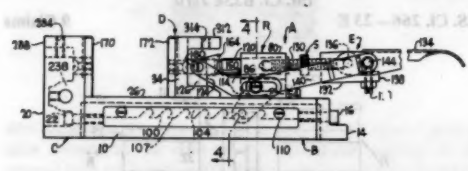
QUICKLY ADJUSTABLE VISE JAW WITH TOOL COUPLE ELEMENTS

Otto G. Hildebrand, 1907 Yucca, Rio Rancho, N. Mex.

Filed June 16, 1971, Ser. No. 153,529

Int. Cl. B25b *1/14*

U.S. Cl. 269—87 **10 Claims**



A multiple purpose workholder of the relatively movable jaw-type, especially adapted for die and tool work, having adjustable toggle mechanism for moving one jaw relative to the other and including detachable accessories, such as, work gauge, punch and die, tool attaching and/or guiding means, etc.

3,759,505

MOUNTING JIG FOR ELECTRICAL OUTLET BOXES

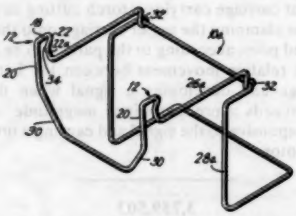
Joseph R. Callanan, 382 Homeland Dr., Whitman, Mass.

Division of Ser. No. 772,566, Nov. 1, 1968, Pat. No. 3,588,084.

This application Nov. 25, 1970, Ser. No. 92,871

Int. Cl. B25b *5/14*

U.S. Cl. 269—98 **9 Claims**



A jig for mounting electrical outlet boxes to building wall and ceiling members having a three sided open loop section adapted to grasp a wall of an outlet box, an alignment arm section extending from the loop section to align the box and jig on a building member, and a leg member section extending from adjacent the arm section to hold the jig and box on a building member.

3,759,506

DEVICE AND METHOD FOR FORMING AN ACCORDIAN PILE FROM A CONTINUOUS WEB, USING AN AIR CURRENT PARALLEL TO THE WEB

Robert Eckl, Goggingen, and Klaus Walter Janson, Diedorf, both of Germany, assignors to Firma Bowe Bohler & Weber KG, Augsburg, Germany

Filed Apr. 23, 1971, Ser. No. 136,767

Claims priority, application Germany, May 20, 1970, P 20 24 624.6

Int. Cl. B65h *45/20*

U.S. Cl. 270—69 **8 Claims**

A device for forming an accordion pile from a continuous web has an upright guide plate along which a web formed with equispaced and oppositely directed creases is passed. A support surface is provided below the plate to intercept the web and support the pile. A current of air is caused to flow at high speed parallel to the plate surface between the plate and the

web in at least the lower region of the plate to hold very thin webs against the plate as they slide downwardly even at very low speeds. This current of air can be directed in the direction of or transverse to the direction of feed of the web.

3,759,507

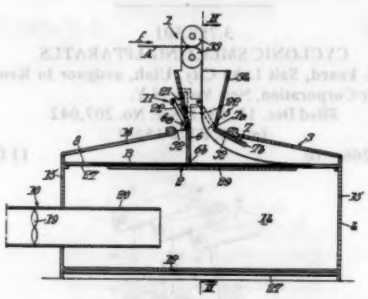
MACHINES FOR THE CONTINUOUS MANUFACTURE OF CLOTH BY SUPERPOSING SEVERAL LAYERS OF A TEXTILE WEB

Jules Imbrecht, Hem, France, assignor to Intissel, Roubaix, France

Filed Apr. 23, 1971, Ser. No. 136,879

Int. Cl. B65h *45/00*

U.S. Cl. 270—69 **6 Claims**



The web is fed onto a horizontal surface moving parallel to the width of the web leaving the feed device. It is laid by alternate sweeping movements of the feed device in a relatively impervious enclosure having a slot for the incoming web lined therein and two flaps inside the slot oscillating to deflect the web and preserve a reduced pressure created inside the enclosure. The receiving surface is air-permeable at its longitudinal edges but impermeable at its central region.

3,759,508

APPARATUS AND METHOD FOR FEEDING BLANKS

Sven Torsten Jeppsson, Drottninggatan 49, Orebro, Sweden

Filed Dec. 6, 1971, Ser. No. 205,212

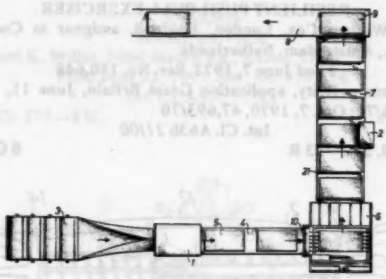
Claims priority, application Sweden, Dec. 14, 1970, 16911/70

Int. Cl. B65h *29/68*

U.S. Cl. 271—69 **18 Claims**

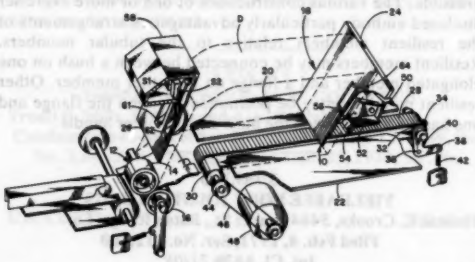
The lateral edges of a continuous web of paper are folded into superimposed relationship and glued together to form a continuous tube. The tube is cut into sack blanks which are fed by a first conveyor belt to a delivery station comprising a pair of nip rolls and a platen mounted to reciprocate transver-

sely relative to the first conveyor belt. The platen has an opening formed therethrough for permitting each sack blank to fall



onto a second conveyor for subsequent formation of an end closure on each sack blank.

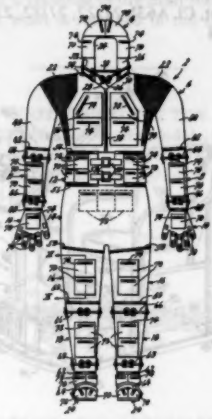
3,759,509
DOCUMENT LOADER
John Allan Peterson, New Brighton, Minn., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Dec. 20, 1971, Ser. No. 209,808
Int. Cl. B65h *1/02, 1/14*
U.S. Cl. 271—150 **8 Claims**



A document hopper, loader and follower assembly is provided wherein documents are automatically loaded into a feed device from a hopper by a movable follower assembly. The follower assembly is so mounted as to allow documents to be added to the hopper while the loading operation is in progress.

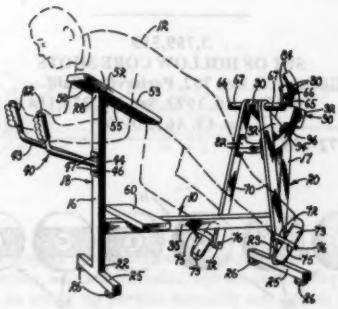
3,759,510
EXERCISE GARMENT
James W. Jackson, Jr., 9246 Newton, Overland Park, Kans.
Filed July 5, 1972, Ser. No. 269,260
Int. Cl. A63b *21/18*
U.S. Cl. 272—57 R **9 Claims**

A composite exercise garment including helmet, jacket, armlets, gloves, belt, shorts, thigh leggings, calf leggings and boots, these components being detachably connected together for use either as a total composite garment, or for use separately or in various combinations, each component of the total garment having exterior pockets which may be either filled or partially filled with particulate weight materials of various densities, with the object that by using the proper components of the garment, properly weighted, and performing specified movements, exercises of any desired degree of



difficulty are provided for any desired muscles or sets of muscles.

3,759,511
ADJUSTABLE FRICTION TYPE EXERCISING DEVICE
De Wayne Zinkin, 2751 Lerwick Rd., Sacramento; Cliff J. Coker, 16727 Bolera Ln., Huntington Beach, and Kenneth A. Gustafson, 9981 Platanel Dr., Villa Park, all of Calif.
Filed Mar. 29, 1971, Ser. No. 128,982
Int. Cl. A63b *23/04*
U.S. Cl. 272—58 **9 Claims**



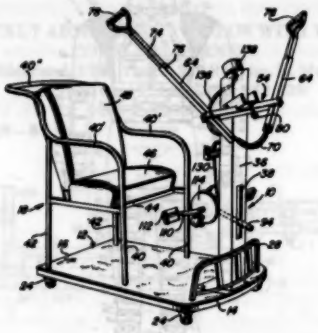
A device for exercising the muscles of the legs, which simulates the striding movement which occurs during actual running. A body support frame is provided having a pair of foot engaging pendulum arms mounted thereon for movement through predetermined arcuate paths of travel with an adjustable friction developing mechanism being operatively associated with an arcuate sector to offer resistance to movements of the arms. The device offers substantially a constant resistive force throughout the entire range of thrust movement during extension of a user's leg and provides substantially unrestricted leg movement in the opposite direction during retraction of a user's leg.

3,759,512

EXERCISE MACHINE

Amos W. Yount, 827 Catalpa St., and Shellie D. Wells, 823 Catalpa St., both of Clarksdale, Miss.

Filed May 24, 1972, Ser. No. 256,562
Int. Cl. A63b 21/22, 21/32, 23/04
U.S. Cl. 272—58 11 Claims



A wheeled base is provided having front and rear ends with an occupant seat disposed on the rear end and an upright having its lower end supported from the front end of the base. A mount is supported from an upper portion of the upright for oscillation about a horizontal transverse axis and the mount extends laterally outwardly on opposite sides of the upright. A pair of spring biased levers are pivotally supported, intermediate their opposite ends from the opposite side portions of the mount for angular displacement about generally parallel axes normal to the axis of oscillation of the mount and an expansion spring is connected between the forward ends of the levers yieldingly biasing the forward ends together and the rear ends of the levers, which are disposed adjacent the seat, apart. Further, a pedal crank assembly is journaled for rotation about a horizontal axis beneath the mount from which the forced levers are supported and the pedal crank assembly is adjustable vertically as well as toward and away from the occupant's seat.

3,759,513

SET OF HOLLOW CORE SHOTS

Orval B. Gillett, P.O. Box 702, Porterville, Calif.

Filed Feb. 10, 1972, Ser. No. 225,114
Int. Cl. A63b 69/00
U.S. Cl. 272—59 B 6 Claims

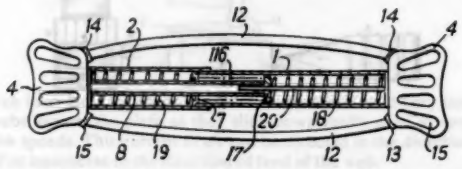
A plurality of differently weighted hollow balls, or shots form a set for use in training shot putters. All the hollow balls of a set have the same diameter at their outer wall surface, and each ball in the set has an inner diameter different from each other ball in the set. The weight of a ball is determined by the inner diameter thereof. This set of hollow balls, or shots permits a shot putter to progress through a scientific weight training program in the art of shot putting by using increasingly heavier balls. Each ball is provided with a pair of diametrically opposed holes communicating with the hollow core thereof for permitting access thereto and for selectively arranging material in the hollow core for increasing the weight of the ball for overweight training. Further, each ball may be provided with a coloring and indicia that is different than the coloring and indicia of each other ball.

3,759,514

RESILIENT PUSH-PULL EXERCISER

John William Cox, London, England, assignor to Compret N.V., Amsterdam, Netherlands

Filed June 7, 1971, Ser. No. 150,648
Claims priority, application Great Britain, June 11, 1970, 28,426/70; Oct. 7, 1970, 47,693/70
Int. Cl. A63b 21/00
U.S. Cl. 272—83 R 8 Claims



A physical exerciser having two elongated members positioned within the first and second tubular members so as to permit the elongated and tubular members to telescope one within the other. A handle is are carried by each of the tubular and elongated members on the ends thereof remote from one another. One or more resilient members may be disposed within the tubular members to resist movement of the handles towards one another enabling physical exercises to be performed. Two lengths of rope are positioned between the handles to provide for another exercise. Pulling exercises are performed by pulling the rope lengths apart to cause the handles to move towards one another. Each resilient member is compressible. The various constructions of one or more exerciser disclosed embody particularly advantageous arrangements of the resilient members relative to the tubular members. Resilient members may be connected between a bush on one elongated member and a flange on the other member. Other resilient members may be positioned between the flange and one handle and between the bush and the other handle.

3,759,515

YIELDABLE BODY JOUSTING BAGS

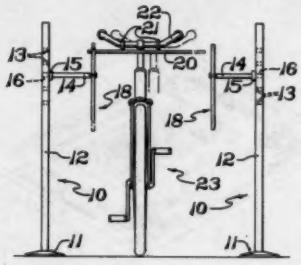
Thomas E. Crooks, 5464 Juarez St., Baton Rouge, La.

Filed Feb. 4, 1971, Ser. No. 112,700
Int. Cl. A63b 71/08
U.S. Cl. 273—1 R 7 Claims

An amusement device involving physical activity and competitive play is described. It comprises an elongate yieldable body having a blunt, impact receiving, vertical frontal face and a rearward portion shaped and sized to fit against the chest of the user. Support members extending upwardly and rearwardly from the body fit over the shoulders of the user and preferably serve as protective shields. Bracing members

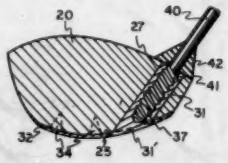
passing rearwardly under the armpits of the user or handle members on the body of the device (and preferably both) are also provided.

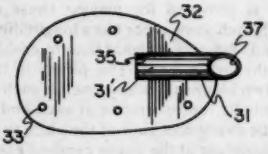
3,759,516
GAME DEVICE
Richard K. Miller, 1004 Stump Rd., Akron, Ohio
Filed June 22, 1971, Ser. No. 155,576
Int. Cl. A63b *71/02*
U.S. Cl. 273—1 R **4 Claims**



A game utilizing a pair of game poles which support horizontally extending bars. The outboard end of each bar journals for rotation a member that is vertically oriented such that a bicycle with a horizontally extending bar clipped to the handlebars is adapted to clear the spacing between the rotatable members. The cyclist attempts to pass between the poles without having the bar engaging the rotatable members. The horizontally extending bars are horizontally adjustable to vary the space between the rotatable members and carry indicia to allow precise adjustment.

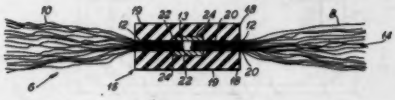
3,759,517
HOSEL-LESS WOOD TYPE GOLF CLUB
Truett P. Mills, 1700 Second Ave., Tuscaloosa, Ala.
Continuation-in-part of Ser. No. 832,994, June 13, 1969, Pat. No. 3,640,534. This application Sept. 23, 1970, Ser. No. 74,656
Int. Cl. A63b *53/02*
U.S. Cl. 273—80.7 **10 Claims**





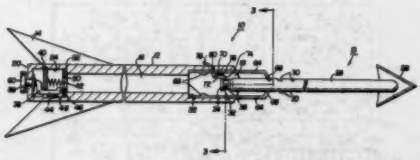
A wood type golf club having a club head with a frontal striking surface, toe and heel portions, a bottom surface, and a top surface, the club head having a shaft receiving opening in the top surface at said heel portion and said top surface being a continuation of the general contour of the club head from the toe to the heel portions. The club head is provided on its bottom surface with a sole plate which is associated with a shaft retainer that is received in the shaft receiving opening in the club head. A shaft is received in the shaft retainer and secured therein.

3,759,518
FOOT IMPELLENT TOY
John M. Mroz, 623 N.E. 2nd St., Hallandale, Fla.
Filed Oct. 13, 1971, Ser. No. 188,902
Int. Cl. A63b *65/10*
U.S. Cl. 273—106 B **6 Claims**



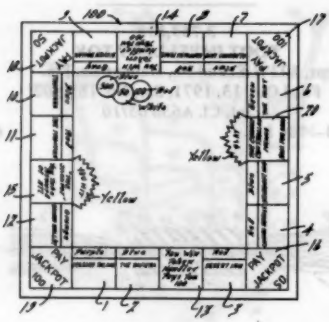
A unitary toy to be repeatedly kicked to keep the toy in play and away from play-ending ground contact, said toy having a plurality of flexible strands disposed in a circular pattern with their outer ends substantially coterminous, and their inner ends tightly bunched between two parts of an elastomer kicking center. The kicking center is weighted to provide desired flight of the toy during repeated kicking, and the strands have inherent strength sufficient to maintain a pattern of circular plane without collapsing due to gravity.

3,759,519
TELESCOPING ARROW
James R. Palma, 1502 Curry Rd., Schenectady, N.Y.
Continuation of Ser. No. 39,298, May 21, 1970, abandoned. This application Mar. 22, 1972, Ser. No. 236,824
Int. Cl. F41b *5/02*
U.S. Cl. 273—106.5 R **10 Claims**



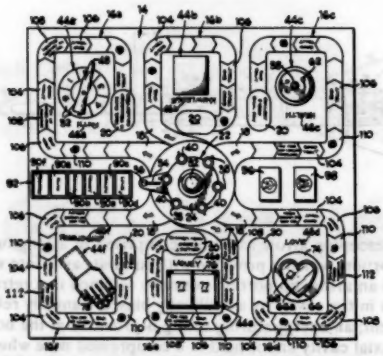
A telescoping arrow assembly comprised of a longitudinal body portion, which is provided with an axial cavity into which extends an arrow tip portion normally retained in a retracted position in the cavity by a resiliently biased manually releasable detent; an energy storing spring is provided at the bottom of the axial cavity and is held in a compressed state when the detent engages a shoulder on the rear end of the arrow tip portion in its retracted position. Upon release of the detent the spring will propel the arrow tip portion outwardly of the cavity into an extended ready position at the front of the body portion is a second detent which engages the shoulder on the rear end of the arrow tip portion to limit forward movement of the tip. A pair of resilient catch fingers are cantilevered outwardly from the front end of the body portion. They engage rearwardly facing notches along the rear part of the tip portion to keep the tip from retracting into the body portion. A resilient washer is located towards the rear end of the body portion cavity and engages a tapered groove on the tip portion to position the tip portion within the cavity.

3,759,520
BOARD GAME APPARATUS
Harold L. Straitwell, Jr., 9484 Church Rd., Grosse Ile, Mich.
Filed Dec. 8, 1971, Ser. No. 206,106
Int. Cl. A63f 3/00
U.S. Cl. 273—134 AD 4 Claims



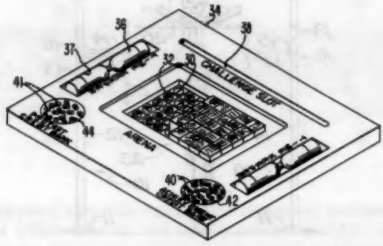
A novel chance controlled game apparatus means comprised of a game board with a multiplicity of positions thereon, a multiplicity of chance controlled means for determining the conditions of the various players in the game, a plurality of tangible reward means for determining a particular player's status in the game, a plurality of game piece marker means, and a plurality of position identification means.

3,759,521
BOARD GAME APPARATUS
Jeffrey D. Breslow, Highland Park; Marvin I. Glass, and Joseph M. Burck, both of Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill., a part interest
Filed Mar. 1, 1972, Ser. No. 230,584
Int. Cl. A63f 3/00
U.S. Cl. 273—134 B 15 Claims



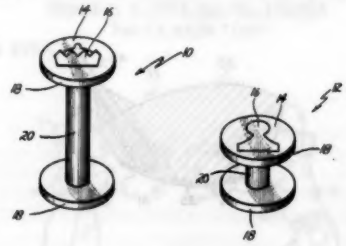
A game which includes a game board having a plurality of individual tracks each defining a plurality of stations from an individual starting point to an individual finishing goal for movement thereover of playing pieces in accordance with numbers selected by individual random number selection devices disposed adjacent each track. A spinner-type random selection device is disposed on the playing board generally centrally thereof, with the tracks disposed thereabout. The spinner determines along which of the tracks a player is to move his respective playing piece in an attempt to achieve a given result for each of the tracks. The game is centered around a theme involving distinguishing qualities or traits of a player and "good trait" and "bad trait" cards are acquired and/or lost by players of the game as the game progresses, the card indicia being related to indicia at the respective tracks.

3,759,522
BOARD GAME APPARATUS
Joseph Hodán, III, 1590 Ebener St. Apt. No. 5, Redwood City, Calif.
Filed Aug. 25, 1971, Ser. No. 174,681
Int. Cl. A63f 3/00
U.S. Cl. 273—135 AA 2 Claims



A dice game comprises a plurality of dice with each side of each die having a segment of a pictorial puzzle, an arena and picture cards, both having matching grids with spaces of such size and number as to receive said dice, and score cards with numbered grids thereon to record points scored, errors made, disputes between players, and track puzzle segments. The game provides amusement and teaches and measures one's visual perception of small internal features of structures, such as historical monuments or buildings.

3,759,523
CHESS GAME PIECES
Alexander Randolph, Naka Ochiai, 1-chome 10-9, Shinaku-ku, Tokyo, Japan
Filed Dec. 29, 1970, Ser. No. 102,424
Int. Cl. A63f 3/02
U.S. Cl. 273—137 R 7 Claims



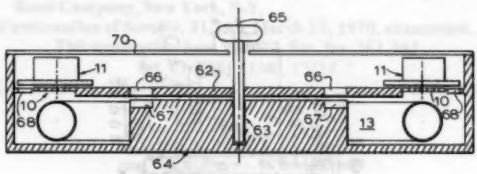
A game set is provided for playing chess or variations thereof in which each game piece has a longitudinal dimension and opposite ends defining a planar base to enable each piece to stand on either of its ends. The pieces in the game are separable into two identical groups, one for each player. Each piece has a symbolic representation at each end thereof corresponding to the strength or rank of the piece so that the rank of the piece is apparent at the upper exposed end. The pieces in one player's group are apparent from those in the other group by providing visually distinguishable means, such as different color markings, at the opposite ends of each piece, one type of marking being associated with one player's group and the other being associated with the other player's group.

3,759,524

GAME OF CHANCE APPARATUS

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif.

Filed Jan. 24, 1972, Ser. No. 220,318
Int. Cl. A63f 5/04
U.S. Cl. 273—142 A 6 Claims



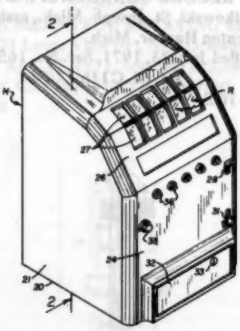
The apparatus of this invention is designed for use in games of chance and particularly in such games which require a display of a player's score, such as a showing of one or more spots on the upturned face of a die, for example. In the present invention an array of spots indicating a player's score is made visible by the emission of light therefrom and the composition of each array will be a function of an angular relationship between a stationary and a rotatable member of the apparatus.

3,759,525

ELECTRICAL ACTUATED CHANCE DEVICE HAVING CHAIN-DRIVEN ROTATABLE DRUMS

Carl B. Davis, 3300 S. Oak Ct., Morrison, Colo.

Filed Oct. 6, 1971, Ser. No. 186,906
Int. Cl. A63f 5/04
U.S. Cl. 273—143 R 4 Claims



The present invention is a game apparatus which effects a play by a set of reels mounted upon a shaft, with each reel rotating freely, to stop or be stopped, at a random position with respect to the other reels. Card faces or like symbols extend about the periphery of the reel and the game play will be by correlation of the card faces on the different reels which fall into alignment when the reels stop rotating.

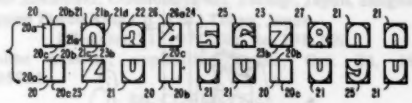
The apparatus uses an electrical pull mechanism to give the reels their initial rotation. Individual reel stops are provided which are actuated by pressing buttons. Sprockets on the reels receive reel-stop detents so the reels stop at indexed positions. Thus, the card faces on the several reels will then lie in alignment and be conveniently exposed through windows in the housing of the unit.

3,759,526

GAME PIECES SELECTIVELY JOINABLE ALONG EDGES THEREOF TO FORM LETTERS OR NUMERALS

Charles Estvan, Jr., 5615 Valley Oak Dr., Los Angeles, Calif.

Filed Aug. 30, 1971, Ser. No. 176,148
Int. Cl. A63f 9/10
U.S. Cl. 273—157 R 6 Claims



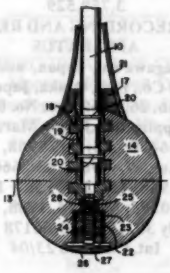
Game apparatus is disclosed including game pieces each having at least one face with at least one pattern thereon, the pattern extending to an edge of the piece. Complete, conventional numerical and/or alphabetical characters are formed by joining pairs of game pieces along the mentioned edges in various combinations, a given pattern representing, in a particular combination of pieces, either the upper or lower portion of the completed character.

3,759,527

GOLF CLUB

William Herbert Witherspoon, 8433 Glendale Rd., Greenbelt, Md.

Filed Apr. 19, 1971, Ser. No. 135,236
Int. Cl. A63b 53/02, 53/04
U.S. Cl. 273—171 2 Claims



The invention involves a substitute club head in the approximate form of an annulus or a sphere or section of a sphere having an endless succession of striking faces all around the club head. The shaft is positioned through the top surface of the club head and is received within a sleeve being coaxial and in alignment with the radius of the sphere. The sleeve cooperates with a weight means in a weight receptacle which is secured within said receptacle within the club head and wherein the weight means and weight securement means are coaxial and aligned with the shaft and shaft receiving sleeve.

3,759,528

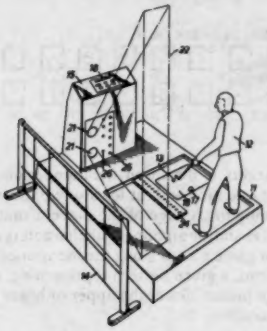
APPARATUS FOR SIMULATING THE PLAYING OF GOLF STROKES

John Roland Christophers, Kings Mill, Painswick, Gloucestershire, and Derek James, Forest Green, both of England, assignors to said Christophers, by said James

Filed Aug. 30, 1971, Ser. No. 175,957
Int. Cl. A63b 69/36, 67/02
U.S. Cl. 273—176 FA 14 Claims

This invention is a machine enabling a golfer to practice golf strokes, striking a real golf ball against a net. Light reflected from the ball during flights is detected by directional detectors arranged in vertically and horizontally arranged banks, and a computer displays range achieved, lateral deviation, height

deviation, lateral deviation due to spin, new distance to hole, and so on. The first bank of detectors gives information about the left-right position of the ball. The second bank of detectors gives information about the start-height of the ball and initiates a timing cycle for determining ball velocity. The third bank of detectors terminates the timing cycle. For detecting



spin, the golf ball may be provided with a super-reflective semi-circular strip which is arranged to extend from top to bottom facing away from the club face. The energization of the detectors is controlled by a sensor which normally receives light radiation but is cut off from the radiation when the ball is on the tee prior to being struck. The machine also includes a club selector unit and a distance of hole selector.

3,759,529

MAGNETIC RECORDING AND REPRODUCING APPARATUS

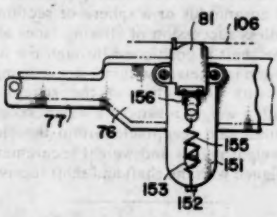
Tetsuji Yoshii, Neyagawa-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 26, 1969, Ser. No. 802,455

Claims priority, application Japan, Mar. 6, 1968, 43/14881; July 31, 1968, 43/66446; July 31, 1968, 43/66471; July 30, 1968, 43/66179; Aug. 7, 1968, 43/56605; July 31, 1968, 43/66445; Apr. 3, 1968, 43/22477; July 11, 1968, 43/49451; Aug. 21, 1968, 43/60298; Mar. 14, 1968, 43/16991; Mar. 27, 1968, 43/19923; July 30, 1968, 43/66178

Int. Cl. G11b *23/04*

U.S. Cl. 274—4 C **17 Claims**



A magnetic recording and reproducing apparatus having a cassette tape comprises head base controlling mechanism, and holding case and provides the following three functions: keeping a tape in contact with a recording and reproducing head and an erasing head to such a degree as not to cause trouble for detecting or erasing the recorded content during fast forwarding or rewinding speed of a tape by the reproducing or erasing head, making it possible to record and reproduce at a constant fowarding speed by advancing the head within the cassette, and also making it possible to mount or demount the cassette by completely withdrawing the head advanced within the cassette therefrom.

3,759,530

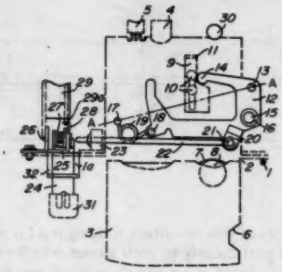
RECORD MECHANISM FOR CARTRIDGE TAPE PLAYER-RECORDER

Kazue Sampei, Fukushima-ken, Iwaki-shi, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Jan. 20, 1972, Ser. No. 219,457

Int. Cl. G11b *27/24*

U.S. Cl. 274—4 B **9 Claims**



A locking mechanism for the selector used in determining the mode of operation of a cartridge type tape player-recorder comprising a cartridge locking arrangement having an arm member movable in response to the insertion of a cartridge into the player-recorder to secure the cartridge therein includes a rod coupled at one end to the arm member of the cartridge locking arrangement for movement therewith. The opposite end of the rod is positioned for engagement with a lever arm coupled to the selector to maintain the latter in a preselected position upon insertion of the cartridge into the player-recorder. The selector is freed upon return of the cartridge locking arrangement to its original position in response to the removal of the cartridge from the player-recorder.

3,759,531

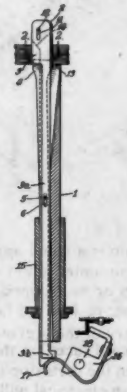
RECOKD CHANGER SPINDLE

Michael H. Estkowski, St. Joseph, Mich., assignor to V-M Corporation, Benton Harbor, Mich.

Filed July 23, 1971, Ser. No. 165,681

Int. Cl. G11b *17/04*

U.S. Cl. 274—10 S **10 Claims**



Record changer spindles designed for feeding phonograph records of a thickness heretofore regarded as standard do not always operate satisfactorily on records of other than standard thickness such as are now coming on the market. The record changer spindle of the present invention is capable of auto-

matically feeding onto the turntable successive phonograph records, one at a time, from a stack which may include interspersed records of different thicknesses or a stack of records all of the same thickness, either thick or thin.

3,759,532

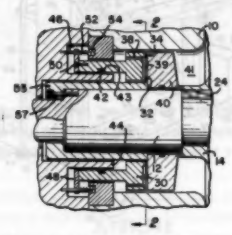
FLUID SEAL

Herman Lindeboom, Pennington, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Continuation of Ser. No. 21,163, March 19, 1970, abandoned. This application June 9, 1972, Ser. No. 261,343

Int. Cl. F16j *15/40, 15/54*

U.S. Cl. 277—27 **5 Claims**



An improved fluid seal is disclosed which may be used equally effectively for either a straight leakoff seal or an injection seal. A differential pressure is maintained in the space between a first sealing member such as a collar on a rotatable shaft and an axially movable second seal member. A plurality of passageways which are equally spaced radially from the axis of the second seal member and equally spaced circumferentially interconnect the space between the two seal members and an external fluid pressure. The new seal may be used for sealing gas or liquid.

3,759,533

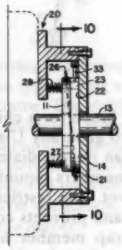
SEALING MEANS FOR ROTATING SHAFT

Willis A. Neely, 121 Levee View Dr., New Orleans, La.

Filed Apr. 12, 1971, Ser. No. 133,087

Int. Cl. F16j *15/00;* **B65d** *53/00*

U.S. Cl. 277—130 **6 Claims**



The present invention pertains to novel means for minimizing fluid leakage along the rotating shaft and the stationary members in conventional machinery such as pumps, compressors, and the like. Such machinery is generally provided with a sealing box positioned circumferentially around the rotating shaft wherein some form of sealing means is positioned. The present invention provides mechanical sealing means for positioning within the sealing box or housing of such machinery and comprises U-shaped members adapted to fit on the rotating shaft in such a manner so as to provide, in combination with the packing gland plate, means for minimizing fluid leakage along the shaft and between the plate and U-shaped members. Additional members are provided in combination with the U shaped members such that the forces involved will be unbalanced and the seal effected.

3,759,534

APEX SEAL FOR ROTARY PISTON ENGINE

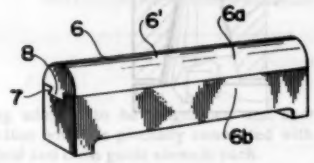
Hiroshi Sakamaki, Utsunomiya-shi, Tochigi, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1971, Ser. No. 191,286

Claims priority, application Japan, Oct. 24, 1970, 45/105981

Int. Cl. F16j *15/65*

U.S. Cl. 277—235 R **1 Claim**



An apex seal for a rotary piston engine is so constructed as to have a head portion with a circular sliding surface. It is made of a metal preferably cast iron, and has a base portion for supporting the head portion, which is made of a heat resistant light metal alloy, synthetic resin, or non-metallic material.

3,759,535

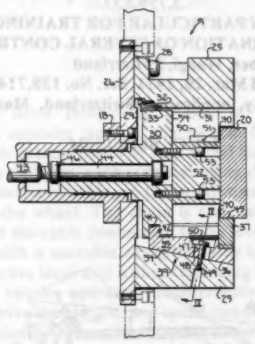
CHUCK WITH INDIVIDUAL JAW COMPENSATION

Howard M. Hilgers, Morton, (Fazewell County), Ill., assignor to Production Technology Inc., Peoria, Ill.

Filed Dec. 27, 1971, Ser. No. 212,547

Int. Cl. B23b *31/12*

U.S. Cl. 279—1 J **3 Claims**



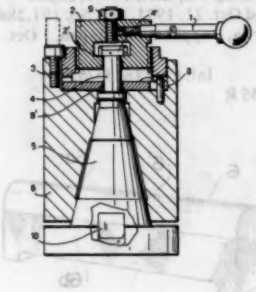
A machine tool chuck includes a chuck body which supports a plurality of jaws having semi-cylindrical mounting portions and correspondingly formed jaw seating ramps within the chuck body to allow the chuck jaws to swivel within their seating ramps about their respective longitudinal axes. The ability to swivel compensates for roughness or irregularities on the workpiece clamping surfaces. A jaw actuating member interconnects the jaws for selective radial contraction and expansion; and upon the imposition of an external inwardly directed force upon the workpiece, the jaws are automatically drawn into more tightly clamping relation to the workpiece.

3,759,536

DEVICE FOR THE QUICK CHANGE OF TOOLHOLDERS

Bruno Bronzini, 18/4 Strada Alberoni, Turin, Italy

Filed June 17, 1971, Ser. No. 154,034
Int. Cl. B23b *31/02, 31/10*
U.S. Cl. 279—89 **3 Claims**



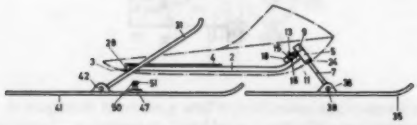
A device for the quick change of toolholders comprises a support having a conical recess receiving a conical member that has a neck having a T-shaped head. The support has a washer with a slot disposed at right angles to the head and through which the head can pass only upon rotation through 90°. A nut is screw-threadedly received in the support and receives the T-shaped head through a slot through which the head falls upon rotation of the nut followed by pressure of the nut against the head in a disengaging direction. The T-shaped head falls on the washer, and the conical portion is rotated 90° to withdraw the head through the washer slot.

3,759,537

VEHICLE, IN PARTICULAR FOR TRAINING IN THE COORDINATION OF SEVERAL CONTROLS

Hermann Schreiber, Wangi, Switzerland

Filed Mar. 29, 1971, Ser. No. 128,714
Claims priority, application Switzerland, Mar. 31, 1970, 4714/70
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **17 Claims**



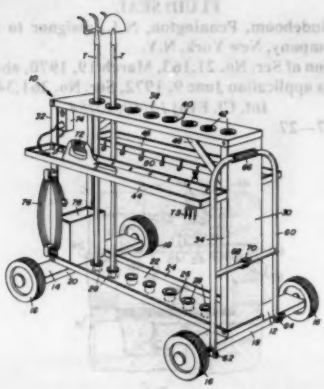
A vehicle for training in the coordination of various controls provided with at least travelling units containing skids, wheels or floats, having at least one seat, each of the travelling units being capable of being lifted or lowered for tilting about its longitudinal and/or transverse axis and at least one travelling unit being adapted to swivel about a vertical axis.

3,759,538

GARDEN KADDY

Anthony J. Fabiano, Bridgehampton Tnpk., Sag Harbor, N.Y.

Filed Dec. 10, 1971, Ser. No. 208,048
Int. Cl. B62b *3/10*
U.S. Cl. 280—47.35 **4 Claims**



A mobile storage facility having means for safely and conveniently supporting a wide range of garden implements, accessories and supplies.

3,759,539

BOUNCE-RESTRICTING BRACE FOR CHILD'S BOUNCER-WALKER

Morris I. Goldberg, 39 Locke Rd., Newton, Mass.

Filed Mar. 16, 1972, Ser. No. 235,235
Int. Cl. B62b *9/22*
U.S. Cl. 280—87.03 **2 Claims**

A bounce restricting brace for a child's bouncer-walker of the type comprising two generally U-shaped frame members pivotally connected at an intermediate position and provided with a pair of spring members mounted between the frame members below the pivot. The restrictive brace which limits the amount of bounce and prevents collapse of the bouncer-walker comprises a strap member having an internal slot which is pivotally mounted to the side of one frame member and slidably mounted to the side of the other frame member.

3,759,540

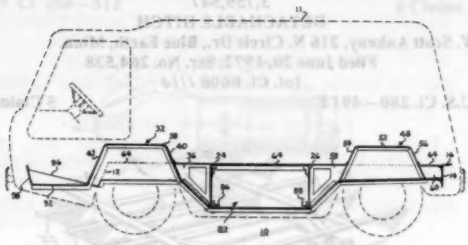
VEHICLE CHASSIS

Hjalmar A. Olson, North East, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 13, 1971, Ser. No. 207,403
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 R **8 Claims**

A lightweight vehicle chassis withstands torsional loads and becomes structurally rigid through the use of a plurality of closed supporting compartments which extend over a substan-

tial portion of the chassis. The closed supporting compartments are formed out of a top layer and a bottom layer of sheet material which are interconnected by vertical webs of the same sheet material. The closed compartments at the front



end of the chassis form a dog-leg configuration including plastic hinge areas of predictable failure which absorb energy upon impact of the front end of the motor vehicle with a solid object.

3,759,541

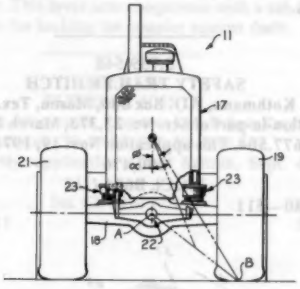
STABILIZER FOR ARTICULATED WHEEL LOADERS

Robert A. Peterson, San Leandro, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 22, 1971, Ser. No. 210,773

Int. Cl. B60g *11/22*

U.S. Cl. 280—112 R **9 Claims**



A stabilizer for improving the lateral stability of an articulated wheel loader of the type having a rigid front axle and an oscillating rear axle or frame. The stabilizer comprises rubber-like resilient members mounted between the rear axle and frame having an exponentially increasing restraining force versus compressive deflection characteristic to prevent free and unrestrained oscillation of the axle in relation to the frame at excessive angles of axle oscillation, thereby increasing the lateral tipping angle of the loader.

3,759,542

AXLE SUSPENSION ON ESPECIALLY REAR AXLE SUSPENSION FOR MOTOR VEHICLES

Erwin Loffler, Friedrichshofen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

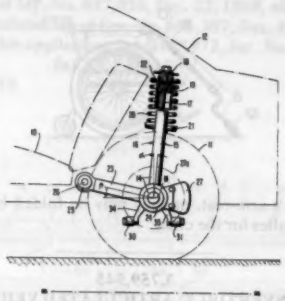
Filed June 4, 1971, Ser. No. 150,097

Claims priority, application Germany, June 6, 1970, P 20 27 885.7

Int. Cl. B60g *11/32*

U.S. Cl. 280—124 A **30 Claims**

An axle suspension, especially a rear axle suspension of motor vehicles in which the wheel carrier is guided by cross and longitudinal guide elements whereby the wheel carrier which carries the wheel journal forms one part of a telescopic



spring leg adapted to be lengthened and shortened under spring action which is pivotally connected with at least one longitudinal and cross guide element each.

3,759,543

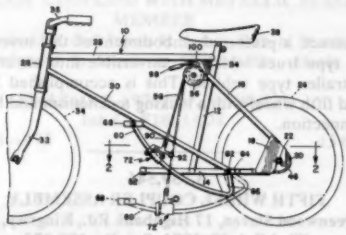
VARIABLE SPEED LEVER ACTION BICYCLE DRIVE

Marion A. Clark, 546 W. Pleasant, Tulare, Calif.

Filed May 22, 1972, Ser. No. 255,642

Int. Cl. B62m *1/04, 23/00*

U.S. Cl. 280—236 **12 Claims**



A bicycle drive comprising a pair of levers pivotally mounted on opposite sides of the bicycle frame, with foot pedals at their extremities. The rear wheel has dual sprockets with one way clutches, each sprocket being connected to one lever by a chain and cable, so that a downward stroke of the lever drives the wheel. The chain is concealed in the frame members and the cable connection to the lever is by means of a bracket which is movable along the lever by foot action, to vary the effective lever arm without changing the pedal stroke. Both pedals can be operated independently, alternately, or together to drive the bicycle, and speed can be shifted on each side independently without interrupting the driving effort.

3,759,544

WHEEL CHAIR WITH PIVOTED HAND BAR

Viljo Gunnar Korpela, Helsinki, Finland, assignor to Oy Suomen Vanutehdas Finnwad Ltd., Helsinki, Finland

Filed Apr. 27, 1971, Ser. No. 137,938

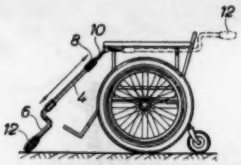
Claims priority, application Finland, Apr. 29, 1970, 1218; Nov. 27, 1970, 3206

Int. Cl. B60n *3/00*; B62k *3/00*

U.S. Cl. 280—289 **12 Claims**

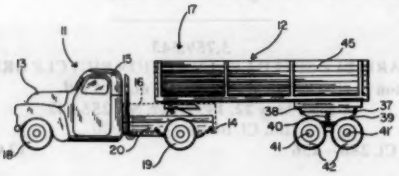
A wheel chair for handicapped persons. The wheel chair includes a pair of hand bars pivotally mounted to the sides of the

chair to assist the disabled person to enter or leave the chair. When not in use, the hand bars may be stored away under the



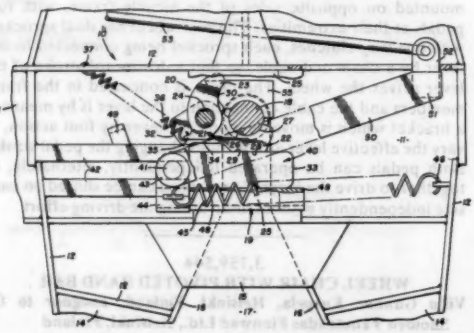
wheel chair's arm-rest, or they may be folded back to act as pushing handles for the chair.

3,759,545
CONVERTIBLE, ARTICULATED VEHICLE
Eddie B. McKethan, Rt. 1, Box 162, Wade, N.C.
Filed June 25, 1971, Ser. No. 156,826
Int. Cl. B62d *53/08*
U.S. Cl. 280—423 R **5 Claims**



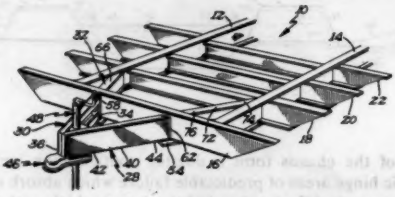
In abstract, a preferred embodiment of this invention is a pick-up type truck which is convertible into an articulated, tractor-trailer type vehicle. This is accomplished by a bed mounted fifth wheel with a locking mechanism and brake and light connection.

3,759,546
FIFTH WHEEL COUPLER ASSEMBLY
John Greenwood Slaven, 17 Highbank Rd., Kingsley, England
Filed Oct. 18, 1971, Ser. No. 190,072
Int. Cl. B62d *53/08*
U.S. Cl. 280—434 **6 Claims**



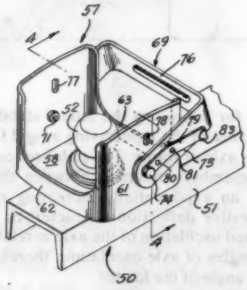
A fifth wheel coupler assembly having a coupler jaw pivotally mounted beneath the top plate at one side of the king pin slot. A gate arm of the jaw swings across the rear of the slot to engage a king pin. A locking bar having a sliding pivot maintains the king pin in coupled condition. A sensor arm also projects into the slot when the assembly is in open or king pin receiving condition and has an orientation such that the jaw will not close if the king pin is in a position so as to not correctly engage with the gate arm.

3,759,547
DETACHABLE HITCH
V. Scott Ankeny, 216 N. Circle Dr., Blue Earth, Minn.
Filed June 20, 1972, Ser. No. 264,538
Int. Cl. B60d *1/14*
U.S. Cl. 280—491 E **5 Claims**



A detachable hitch for use on an elongated frame including a front portion formed of an angled interconnection of two load bearing members and a rear portion formed of two additional load bearing members in angled relation, the front and rear portions interconnected by overlapping plates attached to the respective portions, with the front portion supporting a towing device and the rear portion interconnected with longitudinal load bearing members of the frame to thus form a structurally sound hitch yet allow detachability of the front portion from the rear portion by the separation of the connection plates.

3,759,548
SAFETY TRAILER HITCH
Gilbert C. Kothmann, P.O. Box 680, Mason, Tex.
Continuation-in-part of Ser. No. 23,373, March 27, 1970, Pat. No. 3,677,564. This application Nov. 19, 1971, Ser. No. 200,476
Int. Cl. B60d *1/12*
U.S. Cl. 280—511 **3 Claims**



A safety trailer hitch in which a ball is mounted on the towing vehicle and a ball clamping coupling is mounted on the trailing vehicle. A member carrying a finger is arranged on the towing vehicle to be positioned with the finger overlying the coupling to prevent the coupling from detaching from the ball even if unlocked. The finger is mounted to be swung out of the way as required to permit the coupling to be disconnected from the ball.

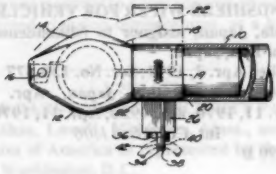
In a modified form of the invention a yoke is mounted on the towing vehicle for swinging to a position overlying the coupling to prevent the coupling from being detached from the ball.

3,759,549

COUPLER FOR TRAILER HITCH OR THE LIKE

Francis Edwin Morris, 1706 Cherry St., P.O. Box 1002, Wausau, Wis.

Filed Jan. 24, 1972, Ser. No. 220,127
Int. Cl. B60d 1/06
U.S. Cl. 280—512 6 Claims



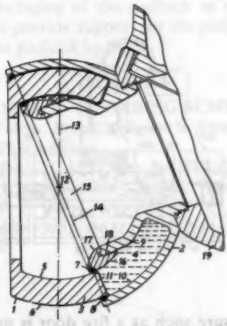
A heavy duty coupler for a trailer hitch including a standard ball head has semi-spherical socket members hinged together by a vertical pin. One of these socket members has a shank by which the coupler is secured to the tongue of the trailer. The other of the socket members has an extension which in the closed position seats in a recess in the shank. A rotatable locking sleeve has a radially or laterally offset recess which permits the extension to swing outward enough to put the coupler to be placed on or removed from the ball. The walls of the locking sleeve and its radial recess provide a camming surface which as the sleeve is rotated toward locked position helps to force the extension into the recess to easily close the sockets in ball retaining position. A biased locking pin engages with selected notch to keep the sleeve in the locked position. The locking pin has a lever arm by which it can be moved to unlocked position. This lever arm cooperates with a tab-like stop to form a means for locking the coupler against theft.

3,759,550

FLEXIBLE JOINTS

Joseph S. Peress, Moorcraft, Lammas Ln., Esher, England

Filed Aug. 30, 1971, Ser. No. 176,191
Claims priority, application Great Britain, Sept. 4, 1970, 42,620/70
Int. Cl. F16l 27/00
U.S. Cl. 285—11 5 Claims



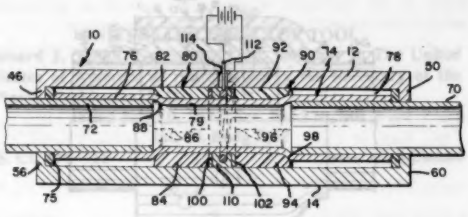
A flexible joint for use with apparatus subjected to an internal/external pressure differential such as used in submersible diving apparatus. The joint comprises an annular male member movably housed within an annular female member. The male member has an annular piston which moves in a closed annular cylinder carrying a sealing liquid in the female member and sealing means are carried on the cylinder walls which engage and seal the walls of the annular piston.

3,759,551

EXPLOSIVELY-FORMED TUBULAR CONNECTION

William F. Broske, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 887,020, Dec. 22, 1969, abandoned, which is a continuation of Ser. No. 691,307, Dec. 18, 1967, abandoned. This application July 10, 1972, Ser. No. 270,371
Int. Cl. F16l 13/14
U.S. Cl. 285—18 6 Claims



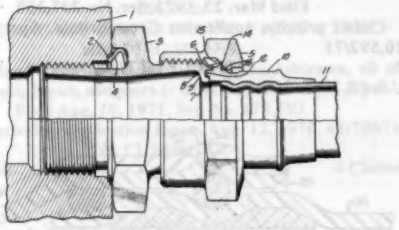
An end portion of a first tubular member is inserted within the end portion of a second tubular member and a die means is disposed in surrounding relation to said second tubular member. Explosive means is disposed adjacent to said die means, and the components are confined within a closed chamber. Detonation of explosive means moves the die means along the second tubular member to cold-forge the second tubular member to the first tubular member.

3,759,552

HYDRAULIC COUPLING WITH METALLIC SEALING MEMBER

Richard Levinsohn, and James E. Jervis, both of Menlo Park, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Sept. 8, 1970, Ser. No. 70,321
Int. Cl. F16l 33/24
U.S. Cl. 285—175 13 Claims



A hydraulic coupling is disclosed for connecting a hydraulic line to a hydraulic component such as a pump, compressor, cylinder or the like. The coupling consists of an adapter which fits into an opening in the hydraulic component. In order to form a leak-free joint between the adapter and the hydraulic component, a heat recoverable metallic sealing ring is placed between the surfaces. A heat recoverable sleeve is affixed to the hydraulic line and this sleeve mates with the adapter to form a seal. This seal results from the contact of a mating surface on the adapter and a corresponding mating surface on the sleeve. One of these mating surfaces projects inwardly toward the axis to permit a small amount of movement of this mating surface in the direction of the axis. A process is also disclosed whereby the metallic sealing ring is cooled below its transition temperature to convert it to a martensitic state only during installation.

3,759,553

PIPE COUPLINGS

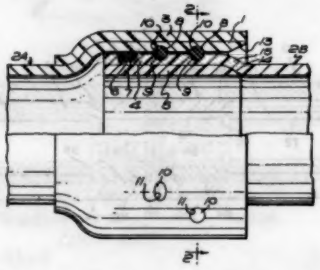
Raymond Charles Carter, Sheffield, England, assignor to Hepworth Plastics Limited, Sheffield, England

Filed Mar. 23, 1972, Ser. No. 237,358

Claims priority, application Great Britain, Apr. 21, 1971, 10,591/71

Int. Cl. F16l *31/00*

U.S. Cl. 285—260 5 Claims



A socket and spigot pipe coupling for plastics pipes is especially adapted to withstand a pull such as is experienced in the mole-ploughing of pipe-lines into the ground by providing additional plastics material to increase the wall thicknesses to accommodate mating circumferential grooves for at least one flexible thrust rod to lock the pipes together and which rod is inserted through a hole in the socket tangential to the groove, the additional plastics material being provided by a collar secured on the outside of the socket and a sleeve secured inside the spigot which has been expanded so as to be a close sliding fit in the socket, the hole for insertion of the flexible thrust rod being provided through the collar as well as the socket.

3,759,554

PIPE COUPLINGS

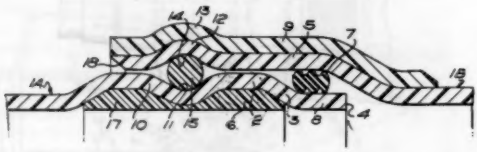
Raymond Charles Carter, Sheffield, England, assignor to Hepworth Plastics Limited, Sheffield, Calif.

Filed Mar. 23, 1972, Ser. No. 237,359

Claims priority, application Great Britain, Apr. 21, 1971, 10,592/71

Int. Cl. F16l *31/00*

U.S. Cl. 285—260 4 Claims



A pipe coupling for socketed and spigoted plastics pipes with a sealing ring between the socket and the inserted spigot does not have any groove cut for locating the sealing ring, instead a portion of the spigot spaced from its ultimate end is expanded so as to be a close sliding fit in the socket, and a plastics sleeve is secured within the expanded portion of the spigot, the sealing ring being located on the portion of the spigot between the expanded portion and the ultimate end of the spigot. The principle of the invention is extended to the formation of grooves for a locking rod by expanding a second portion of the spigot still further from the ultimate end of the spigot, with its own internal plastics sleeve or an extension of the sleeve in the first expanded portion, the two expanded portions forming between them a circumferential groove round the outside of the spigot, and by expanding a portion of the socket to form a mating circumferential groove round the inside of the socket, the locking rod being inserted through a hole in the socket tangential to the grooves.

3,759,555

STRUCTURE OF BALL-AND-SOCKET JOINT USED FOR COUPLING LINK MEMBERS FOR DRIVING A WINDSHIELD WIPER FOR VEHICLES

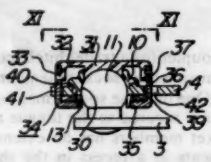
Isao Ito, Handa, Japan, assignor to Nilkondenso Kabushiki Kaisha, Aichi-Ken, Japan

Filed Apr. 2, 1971, Ser. No. 130,577

Claims priority, application Japan, Apr. 10, 1970, 45/35083; Apr. 11, 1970, 45/34930; Apr. 11, 1970, 45/34931

Int. Cl. F16c *11/06*

U.S. Cl. 287—90 D 2 Claims



An improved structure of the ball-and-socket joint used for coupling link members for driving a windshield wiper for vehicles, comprising a combination of a ball fixedly mounted on one of the link members, and a socket mounted in the other link member to be pivotably connected to said one link member and having a recess for slidably receiving said ball therein. The improved ball-and-socket joint is provided with means for restraining the outward expansion of a collar-like section of the socket by pressing said section over the entire outer peripheral surface thereof, which collar-like section is formed integrally with the socket extending from the peripheral edge of the recess and has a plurality of slits formed therein.

3,759,556

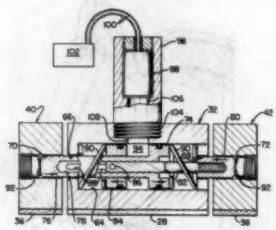
EMERGENCY RELEASING SAFETY APPARATUS

Arthur G. Wright, 7585 Raleigh St., Westminster, Colo.

Filed Apr. 5, 1971, Ser. No. 131,177

Int. Cl. E05c *17/02*

U.S. Cl. 292—33 12 Claims



A safety closure such as a fire door is usually attached to one side of normally open passage and extendable across passage to block it in emergency. Retainer members at each side and a link means extending across the path of extension surround the door to restrain it in retracted position. The link means comprises a main body member and a second body member separable therefrom each body member being connected to one retainer member. Slidable latch pins extend between the body members to hold them assembled. In one form, cylinder in main body contains two pistons with attached latch pins slidable into secondary body member.

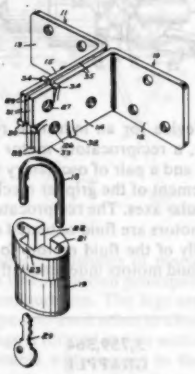
Charge of high pressure gas in cylinder moves pistons to retract pins for release. In another form, cylinder contains one piston with attached pin slidable into secondary body member, and secondary body member carries second latch pin slidable into main body member. Gas moves piston to retract first pin, and boss on piston drives second pin to release position. A sensor-operated squib or the like provides the gas charge. Body members include fasteners anchored in low melting point material to allow separation when subjected to predetermined elevated temperatures, as a back-up safety measure.

3,759,557

LOCKING BARS FOR HIGH SECURITY PADLOCKS

Stanley T. Athas, Lowell, Middlesex, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 25, 1971, Ser. No. 146,711
Int. Cl. E05c *19/08*
U.S. Cl. 292—281 **6 Claims**



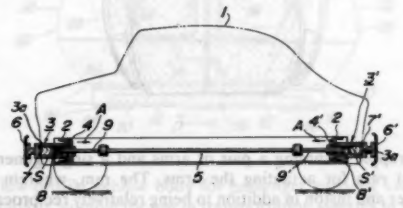
The invention relates to locking bars for use with a type of high security which includes a recess therein to accommodate the shackle and a transverse recess adapted to accommodate part of the locking bars when the shackle is in locking position on the locking bars. The invention comprises providing the locking bars with one or more abutments which serve to prevent improper mounting of the padlock on the locking bars, to prevent swinging of the padlock in relation to the locking bars and to provide support for the padlock during attempts to defeat the padlock by force.

3,759,558

FLUID SHOCK ABSORBING BUMPER

Koichi Komatsu, Tokyo, Japan, assignor to Atsugi Motor Parts Co., Ltd., Atsugi City, Japan

Filed Dec. 27, 1971, Ser. No. 212,494
Claims priority, application Japan, Dec. 29, 1970, 45/120672
Int. Cl. B60r *19/02*; B61f *19/04*; B61g *11/12*
U.S. Cl. 293—30 **2 Claims**



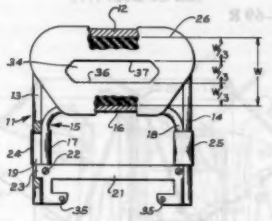
A shock absorbing device for vehicles which includes a front bumper, a rear bumper, a link rod means connecting said front and rear bumpers, and a pair of hydraulic damper means inserted between each end of the link rod means and the corresponding bumper, respectively. Upon application of a shock to one of the bumpers, both the shocked bumper and the link rod means move toward the other bumper, so as to simultaneously actuate said pair of hydraulic damper means. As a result, the apparent bumper stroke is doubled, as compared with that of single damper shock absorber, without increasing the distance between the two bumpers.

3,759,559

UNIVERSAL EXTRACTOR TOOL

Leonard J. Yuska, Greenwood, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 10, 1972, Ser. No. 270,380
Int. Cl. B65g *7/12*
U.S. Cl. 294—15 **3 Claims**



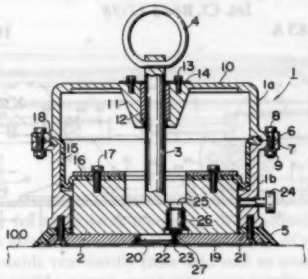
A universal extractor tool having first and second U-shaped members attached together for relatively slidable movement in one direction and having a resilient cushion of non-metallic material positioned between said U-shaped members for providing first and second resistive forces when said U-shaped members are moved together. A puller plate is removably attached to one of said U-shaped members and means are provided on said puller plate for engaging a module board to be extracted from a mounting frame.

3,759,560

CONVEYING APPARATUS HAVING VACUUM TYPE HOLDING MEANS

Mikio Yoda; Shinnosuke Ishida, and Haluo Ashizawa, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1971, Ser. No. 170,593
Claims priority, application Japan, Aug. 12, 1970, 45/70071
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 R **4 Claims**



A lifting apparatus including a cylinder having at its lower end a flexible holding pad adapted to be placed on the surface of a body to be conveyed, a piston air-tightly received in the cylinder, and a piston rod secured to the piston and extending

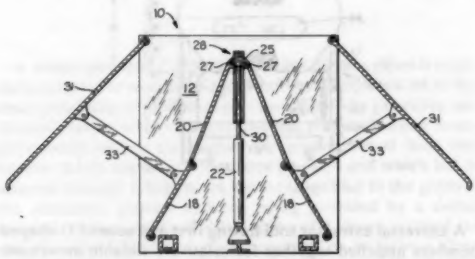
through the upper end of the cylinder, the projecting end portion of the piston rod being adapted to be used for the purpose of hanging the apparatus, characterized by a bottom plate arranged at a position displaced inwardly toward the cylinder from a plane including the peripheral edge of the holding pad, a valve provided in the piston for controlling the communication between said cylinder and the holding pad, and depressing means confronting to said bottom plate and adapted to control said valve, whereby said valve is automatically controlled each time when the apparatus is placed on the body to be conveyed so that the vacuum is alternately established in and released from the cylinder.

3,759,561

EJECTOR-TYPE REFUSE CONTAINER

Roy J. Barnes, Pleasonton, and Donald W. Stroot, Castro Valley, both of Calif., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 1, 1971, Ser. No. 194,702
Int. Cl. B65f 1/12
U.S. Cl. 294—69 R **9 Claims**



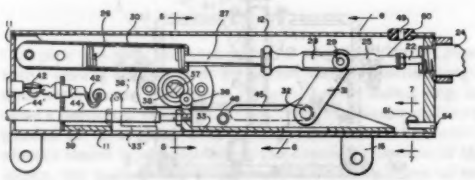
A transportable body defines a compartment therein containing back-to-back ejector means, each comprising a vertically disposed inner wall section pivotally connected to a horizontally disposed floor section. A normally closed outer wall section is pivotally mounted on each open side of the body and each is connected to a floor section to open upon actuation of a vertically disposed double-acting hydraulic cylinder. The cylinder is interconnected between the body and the inner wall sections to move them upwardly during the ejecting phase of refuse disposal.

3,759,562

CABLE ACTUATOR

John D. Keich, Mountain View, Calif., and George A. Laliberte, Hudson, Mass., assignors to the United States of America as represented by the Secretary of the Army

Filed Sept. 12, 1972, Ser. No. 288,454
Int. Cl. B64d 17/38
U.S. Cl. 294—83 A **10 Claims**



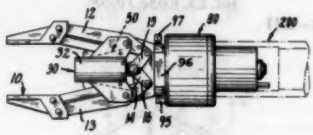
A cable actuator for releasing the latch element of a releasable coupling comprising a latch and a link assembly in a parachute extraction system for airdropping heavy loads from aircraft. The cable actuator is normally triggered mechanically as the load exits from the aircraft. The cable actuator of the invention is provided with an electrical solenoid triggering means for use in an emergency situation, such as when the load becomes jammed in the aircraft after deployment of the extraction parachute. The cable actuator is also provided with a manual backup for use in actuating the cable in case of malfunction of the electrical triggering means.

3,759,563

MANIPULATOR DEVICE FOR USE WITH INDUSTRIAL ROBOTS

Yoshiaki Kitamura, Kamagaya-machi, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,552
Claims priority, application Japan, Dec. 26, 1970, 45/118894
Int. Cl. B25b 1/18; B63c 11/00
U.S. Cl. 294—88 **12 Claims**



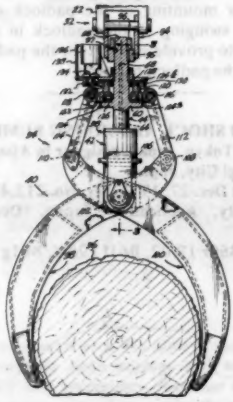
A manipulator device for an industrial robot comprises a gripper mechanism, a reciprocatory motor for actuating the gripper mechanism and a pair of oscillatory motors for effecting angular displacement of the gripper mechanism about two mutually perpendicular axes. The reciprocatory motor and the pair of oscillatory motors are fluid-actuated and a fluid circuit is provided internally of the fluid motors for effecting actuation of each of the fluid motors independently of the operation of the others.

3,759,564

GRAPPLE

Richard D. Seaberg, Vancouver, Wash., assignor to Pierce-Pacific Manufacturing, Inc., Portland, Oreg.

Filed Mar. 8, 1971, Ser. No. 121,847
Int. Cl. B66c 1/44
U.S. Cl. 294—88 **6 Claims**



A grapple including a pair of arms and a single generally upright ram for actuating the arms. The ram, wherein the cylinder and piston in addition to being relatively reciprocable are also relatively rotatable, accommodates unlimited rotation of the arms as a unit about the ram's longitudinal axis. A rotator for producing such rotation is drivingly interposed

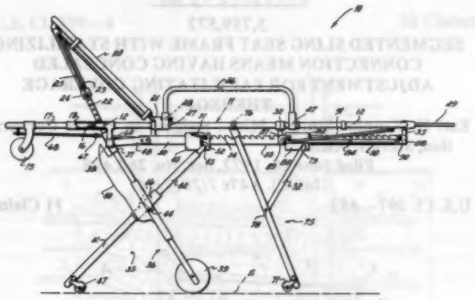
between the piston and cylinder. Pressure fluid is supplied to and exhausted from opposite ends of the ram's cylinder through fluid passages formed in the ram's piston. The piston thus performs as a sort of revolving connector in the ram. The ram and arms are interconnected in such a manner that the weight of any load gripped by the arms tends to tighten the grip on the load.

3,759,565

MULTI-LEVEL ONE-MAN CART

Richard H. Ferneau, Washington Court House, Ohio, assignor to Burt Wiel, Cincinnati, Ohio

Filed Apr. 12, 1972, Ser. No. 243,376
Int. Cl. B62h *3/02*; A61g *1/02*
U.S. Cl. 296—20 **21 Claims**



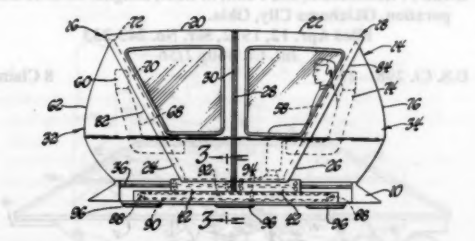
A cart for transporting articles of merchandise or human bodies comprises a bed supported principally on four legs having an X-frame configuration. The legs are capable of being angulated with respect to each other to change the level of the bed. One pair of legs is formed in two sections, the lowermost section being pivotable with respect to the upper section to permit it to swing into substantial alignment with the fixed legs. This enables a single operator to thrust the cart into a vehicle while standing at one end of the cart. In addition, the legs may be adjusted to vary the level of a cart by a single operator.

3,759,566

VEHICLE BODY CONSTRUCTION

Albert J. Sobey; Norman McQueen, and Robert R. Larsen, all of Bloomfield Hills, Mich., assignors to Transportation Technology, Inc., Madison Heights, Mich.

Continuation of Ser. No. 835,403, May 9, 1969, abandoned. This application July 28, 1971, Ser. No. 167,016
Int. Cl. B60v *1/18*; B60n *1/00*
U.S. Cl. 296—28 R **8 Claims**



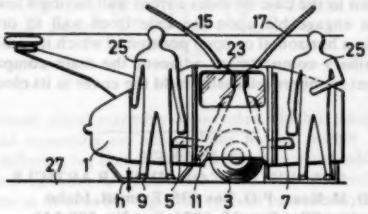
A low-profile vehicle body for passenger carrying vehicles particularly suitable for use in transportation systems in major activity centers. The vehicle body includes a base portion with enclosure means cooperating therewith to define a passenger compartment of low-profile for comfortably seating passengers, and in which the passengers can quickly and easily enter and leave the passenger compartment in an upright or standing position. The access opening to the passenger compartment is closed during transit by a movable section having a top portion forming a portion of the roof of the passenger compartment and a pair of side portions depending from the top portion forming at least a portion of the side walls of the passenger compartment.

3,759,567

VEHICLE WITH PASSENGER SEATS

Daniel Steiner, Schaffhausen, and Ernst Blochlinger, Neuhausen, both of Switzerland, assignors to Schweizerische Industrie Gesellschaft, Neuhausen, Switzerland

Filed Sept. 17, 1971, Ser. No. 181,505
Claims priority, application Austria, Sept. 24, 1970, A 8632/70; Aug. 27, 1971, A 7522/71
Int. Cl. B60n *1/04*
U.S. Cl. 296—63 **10 Claims**



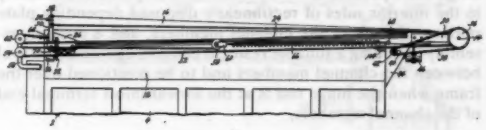
A passenger vehicle having an enclosed passenger compartment containing a passenger seat. The floor of the vehicle is the floor of the compartment and is attached to the passenger seat. To facilitate passenger entrance and exit from the compartment, the floor and attached seat pivot to lower the floor. The canopy cover over the compartment elevates and the side door of the compartment opens to permit passenger entrance and exit.

3,759,568

COVER FOR TRUCK BEDS

Cecil Unruh, 8603 Floyd, Overland Park, Kans.

Filed Sept. 28, 1971, Ser. No. 184,568
Int. Cl. B60j *7/08*
U.S. Cl. 296—98 **5 Claims**



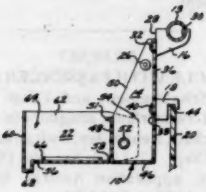
A cover for truck beds consisting of a flexible cover sheet wound on a reel mounted at the forward end of the truck bed and extendable rearwardly from said reel to cover said truck bed, a reversible power mechanism for turning said reel to selectively pay out or reel in the cover sheet, a tension mechanism operable to apply an increasing tension to said cover sheet as it is paid out from the reel, and a latch mechanism operable to secure the cover sheet in its extended position independently of the tension mechanism.

3,759,569

RECEPTACLE ATTACHMENT FOR WHEELCHAIR ARM

Lester H. Bennet, 11482 Foster Rd., Rossmoor, Calif.

Filed Dec. 8, 1971, Ser. No. 206,014
Int. Cl. A47c 7/62
U.S. Cl. 297—194 1 Claim



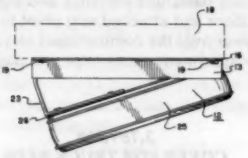
A receptacle attachment comprising a case adapted for fixed mounting to a wheelchair arm and defining a main compartment for receiving sundry articles. A cover pivotally mounted to the case includes a front wall having a lower edge portion engageable upon the case front wall to orient the cover in a horizontal or open position in which its walls define an auxiliary compartment adjacent the main compartment. Resilient snubbers releasably hold the cover in its closed position.

3,759,570

STADIUM SEAT OR SIMILAR ARTICLE

Larry D. McKean, P.O. Box 435, Emmett, Idaho

Filed Dec. 15, 1971, Ser. No. 208,141
Int. Cl. A47c 15/00, 27/00
U.S. Cl. 297—236 1 Claim



The stadium seat of this invention comprises a frame including a pair of distally disposed channel members operable to be fastened transversely beneath a suitable structural member of a stadium and a hinge means having a transversely disposed hinge rod operable to slide within slots disposed rectilinearly in the interior sides of rectilinearly disposed depending plate portion of each of the channel members, and a cushion assembly including a suitable resilient cushion operable to travel between the channel members and to be positioned over the frame when the hinge rod is at the forwardmost terminal end of the channel members.

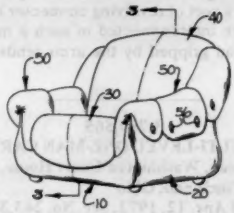
3,759,571

SEAT CONSTRUCTION

Henning Korch, Lugano, Switzerland, assignor to Burris Industries, Incorporated, Lincolnton, N.C.

Filed June 6, 1972, Ser. No. 260,137
Int. Cl. A47c 7/20, 7/14
U.S. Cl. 297—445 11 Claims

A seat in the form of an upholstered chair or sofa of modular construction having a skeletal frame to which molded side arms formed of reinforced rigid foam are secured, with a cushioned seat and a cushioned back rest carried by the skeletal frame and formed as modular pre-upholstered units,



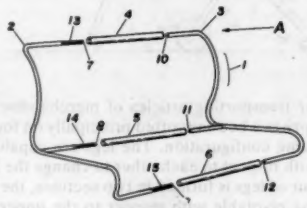
and wherein pre-upholstered side arm cushions overlie the rigid foam side arms and are secured thereto.

3,759,572

SEGMENTED SLING SEAT FRAME WITH STABILIZING CONNECTION MEANS HAVING CONCEALED ADJUSTMENT FOR FACILITATING COVERAGE THEREOF

Earl H. Koepke, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.

Filed June 20, 1972, Ser. No. 264,498
Int. Cl. A47c 7/20, 7/14
U.S. Cl. 297—452 11 Claims



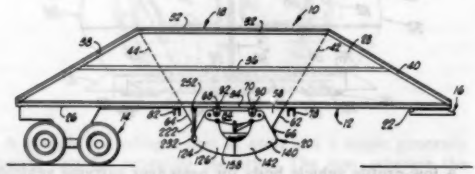
Segmented sling-seat frame comprising a plurality of frame segments adapted to be connected by elongated tubular connection means including adjustment means for adjustment of an external dimension of said seat frame concealed therein, said connection means being of sufficient length to support the extremities of both frame members therein and to stabilize the coupling by sliding engagement with said frame members. Especially significant where said frame is a "free-standing" frame. Permits convenient adjustment of an external dimension of said frame, thereby facilitating coverage with a tubular seat cover or the like.

3,759,573

BOTTOM-DUMPING TRAILER WITH SHIFTABLE CLOSURE ASSEMBLY

Glenn F. Rosenbaum, Elk Point, S. Dak., assignor to CMI Corporation, Oklahoma City, Okla.

Filed Apr. 12, 1972, Ser. No. 243,233
Int. Cl. B60p 1/56
U.S. Cl. 298—29 8 Claims



A bottom-dumping semi-trailer including a closure assembly mounted beneath a hopper having an opening in the

lower end portion thereof. The closure assembly is adapted to automatically open and close along a line either parallel to or transverse to the longitudinal axis of the trailer depending upon the positioning of the closure assembly relative to the trailer. Means are disclosed for controlling the movement of the two closure members of the closure assembly relative to each other. Also disclosed is a bottom-dumping semi-trailer including a second hopper with a second closure assembly mounted therebeneath.

3,759,574

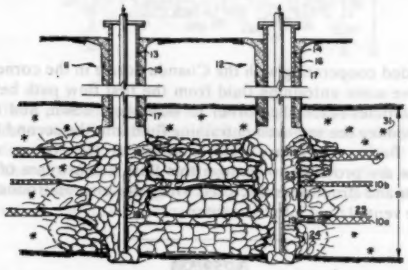
METHOD OF PRODUCING HYDROCARBONS FROM AN OIL SHALE FORMATION

Thomas N. Beard, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 779,964, Oct. 28, 1968, abandoned. This application Sept. 24, 1970, Ser. No. 75,009

Int. Cl. E21b *43/28*

U.S. Cl. 299—4 **22 Claims**



A method of producing hydrocarbons and optionally water-soluble minerals from a subterranean oil shale formation containing zone(s) of water-soluble minerals, by penetrating said formation with at least one borehole and leaching or dissolving the water-soluble minerals from the formation with a solvent fluid so as to form a cavern(s) and/or interconnected cavities, followed by fracturization and/or rubblization of the oil shale surrounding the caverns or cavities, and thereafter injecting into fracturized and/or rubblized zones, a pyrolyzing fluid to effect in-situ hydrocarbon recovery therefrom.

3,759,575

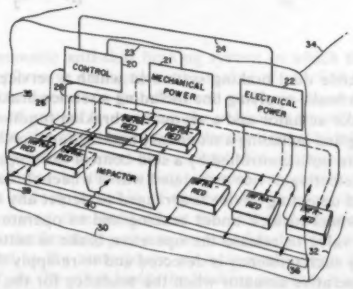
MINING AND TUNNELING APPARATUS INVOLVING ALTERNATED APPLICATION OF THERMAL AND MECHANICAL ENERGY AND PROCESS THEREOF

James Boyd, New York, N.Y.; Lawrence A. Garfield, Colorado Springs, Colo.; Clifford Hanninen, Madison, Wis., and Eugen Maki, White Pine, Mich., assignors to Copper Range Company, New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,213

Int. Cl. E21c *27/34, 37/18*

U.S. Cl. 299—14 **7 Claims**



A mining or tunneling apparatus is provided for continuous underground excavation through rock of relatively high to relatively low hardness. The apparatus comprises impactors and heaters having alternately operative and inoperative modes which are selected in reference to the condition of the excavation face. Functional relationships between the applied thermal and mechanical energy are given. Optional separation of ore and gangue at the mining face is outlined.

3,759,576

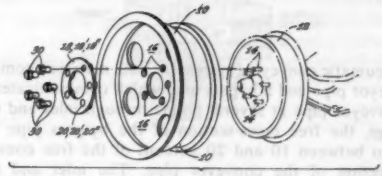
CUSTOM WHEEL ASSEMBLY

Roy E. Richter, Downey, Calif., assignor to Crager Industries, Inc., Compton, Calif.

Continuation-in-part of Ser. No. 107,220, July 18, 1971, which is a continuation-in-part of Ser. No. 83,049, Oct. 22, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 189,971

Int. Cl. B60b *3/16*

U.S. Cl. 301—9 DN **8 Claims**



A custom wheel assembly is provided which is adapted for universal mounting on automobiles having, within a given range, different lug bolt circle radii. The weeel assembly of the invention includes a wheel with holes of sufficiently large diameter to fit over the lug bolts of most present day automobiles, and it also includes an adapter member with integral bushings adapted to fit into the holes in the wheel and with the bores of the bushings aligned with the lug bolts of the particular automobile drive drum on which the wheel is mounted, a different adapter member being required for each of the various lug bolt radii used in the different makes of present day automobiles.

3,759,577

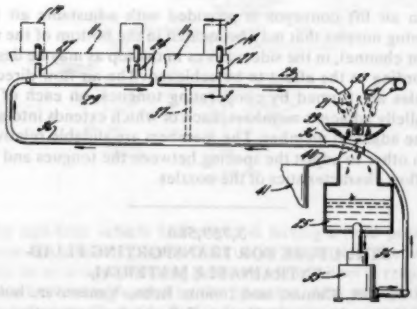
COIN COLLECTING SYSTEM

Marvin R. Manzer, Rockford, Ill., assignor to Reed Industries, Inc., Rockford, Ill.

Filed Feb. 14, 1972, Ser. No. 226,026

Int. Cl. B65g *53/00*

U.S. Cl. 302—2 R **3 Claims**



Coins deposited in the coin-receiving units of coin-operated machines drop into manifolds communicating with the receiving units and a remote collection area. Liquid is continuously or periodically flushed through the manifold and carries the coins through the manifold and into the collection area where the coins are separated from the liquid.

3,759,578

APPARATUS FOR CONVEYING BULK MATERIAL

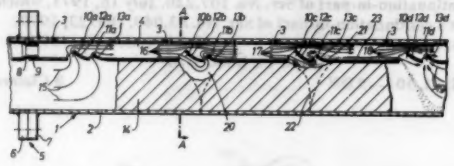
Edgar Muschelknautz, Leverkusen-Bayerwerk, and Wolfgang Krambrock, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 23, 1971, Ser. No. 211,507

Claims priority, application Germany, Jan. 19, 1971, P 21 02 301.8

Int. Cl. B65g *53/04*

U.S. Cl. 302—29 **7 Claims**



A pneumatic conveying system for bulk materials comprises a conveyor pipe and a bypass pipe which communicates with the conveyor pipe at several points through inlet and outlet openings, the free cross-section of the by-pass pipe being equal to between 10 and 20 percent of the free conveying cross-section of the conveyor pipe. The inlet and outlet openings are formed by radial cut-outs in the wall of the bypass pipe, the ducts of the pipe wall immediately following these cut-outs being in the form of tongues which block from 10 to 90 percent of the free cross-section of the bypass pipe.

3,759,579

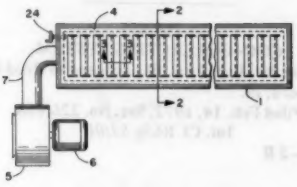
AIR CONVEYOR DECK

William F. Johnston, Louisville, Ky., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Nov. 26, 1971, Ser. No. 202,406

Int. Cl. B65g *51/02*

U.S. Cl. 302—31 **5 Claims**



An air lift conveyor is provided with adjustable air flow defining nozzles that may be located in the bottom of the conveyor channel, in the side walls or in the top as may be desired according to the effect to be achieved. The air flow directing nozzles are formed by cooperating tongues, on each of two parallelly adjacent members, each of which extends into a slot in the adjacent member. The members are slidable relative to each other to adjust the spacing between the tongues and thus the flow characteristics of the nozzles.

3,759,580

STRUCTURE FOR TRANSPORTING FLUID-ENTRAINABLE MATERIAL

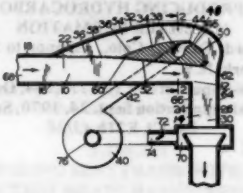
Dale M. Ott, Camas, and Imants Reba, Vancouver, both of Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed May 22, 1972, Ser. No. 255,700

Int. Cl. B65g *53/34*

U.S. Cl. 302—64 **12 Claims**

Fluid-entrainable material is transported along a first flow path and then around a bend or corner to a second flow path. In order to minimize impingement of the particles against a surface defining the outer radius of the corner, means, in the form of a Coanda nozzle which is further described in the specification, is arranged in the corner to increase the downstream flow velocity along a downstream surface in the second flow path leading from the inner radius of the corner as compared to downstream flow velocity along the surface defining the outer radius of the corner. Further, means are



provided cooperating with the Coanda nozzle in the corner to remove some entraining fluid from the first flow path before the particles reach the corner to slow them down, and then reintroduce the removed entraining fluid into the second flow path. Because auxiliary fluid is added at the corner, vent means are provided to remove this fluid downstream of the corner and structure is disclosed which permits reintroduction of the vented fluid into the corner.

3,759,581

BRAKING SYSTEMS

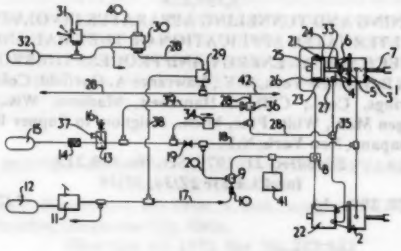
John Walter Davis, Warwickshire, England, assignor to Dunlop Holdings Limited, Fort Erdingham, Birmingham, England

Filed Aug. 3, 1971, Ser. No. 168,617

Claims priority, application Great Britain, Aug. 6, 1970, 37,909/70

Int. Cl. B60t *8/12*

U.S. Cl. 303—13 **20 Claims**



A vehicle dual braking system in which a service braking function brake-applying line including a service braking function brake actuator and a secondary braking function brake-applying line including a secondary braking function brake actuator are both controlled by a skid-control valve operated by a skid-detecting device associated with a wheel of the vehicle. The skid detecting device is arranged to detect any tendency of the wheel to lock under braking and to operate the skid control valve to release the operative brake actuator whenever any such tendency is detected and to re-apply the previously operative actuator when the tendency for the wheel to lock has been overcome, of which the following is a specification.

3,759,582
FAULT DETECTING SYSTEM FOR VEHICLE ANTI-SKID CONTROL SYSTEMS

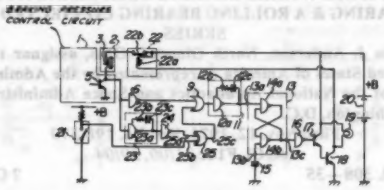
Jun Ohta, Toyota; Atsutoshi Okamoto, Toyohashi, and Akio Sugiura, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, both of Japan

Filed Aug. 17, 1971, Ser. No. 172,418

Claims priority, application Japan, Aug. 18, 1970, 45/72269; Sept. 11, 1970, 45/80267; Sept. 29, 1970, 45/85442

Int. Cl. B60t *8/00*

U.S. Cl. 303—21 AF 13 Claims



A fault detecting system for detecting faults in an anti-skid control system for vehicles which system prevents the loss of steering capacity, the abnormal spinning of the vehicle body and the like due to the locking of the wheel which occurs when an excessively large braking pressure is applied rapidly to a vehicle such as an automobile.

3,759,583
ANTI-SKID BRAKING SYSTEM WITH TWO MODES OF OPERATION

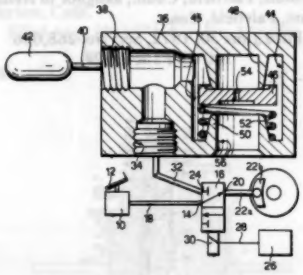
Marco Peruglia, and Virginio Maggioni, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed July 18, 1972, Ser. No. 273,011

Claims priority, application Italy, July 28, 1971, 69531 A/71

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F 3 Claims



A pneumatic anti-skid braking system in which there is a very simple valve arrangement by means of which the braking system can operate in two different modes in dependence on the type of ground over which the vehicle is travelling at the time when the anti-skid control device works to release the braking pressure to avert an incipient skid, the type of ground being detected by the braking pressure required to produce the state of incipient skid. If the braking pressure is below a predetermined threshold when the anti-skid control device operates the braking pressure is immediately and completely exhausted to the atmosphere via a normally open discharge outlet; if, on the other hand, the braking pressure is above the threshold value it urges a piston to shut the normally open discharge outlet against the action of a calibrated threshold spring, the piston has a restrictor throttle opening so that the pressure can discharge gradually, and an absorber cylinder is arranged to communicate with the chamber formed by the closure of the piston, to absorb the pressure so that there is an initial sharp drop followed by a gradual drop as the pressure leaks through the restrictor throttle in the piston.

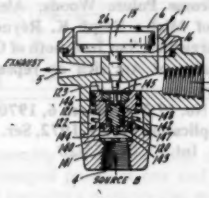
3,759,584
PARKING BRAKE CONTROL VALVE

Boleslaw Klimek, Des Plaines, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 161,176, July 9, 1971, abandoned. This application Oct. 4, 1971, Ser. No. 186,290

Int. Cl. B60t *13/22*

U.S. Cl. 303—71 9 Claims



A parking brake hand control valve assembly wherein an operating shaft is movable in one direction to transmit fluid pressure through said valve from a first source and movable further in the same direction to transmit fluid pressure through said valve from a second source and a shuttle valve assembly precludes loss of pressure from said first source and the brake system to said second source.

3,759,585
ANTI-LOCK BRAKE SYSTEMS

Derek R. Skoyles, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

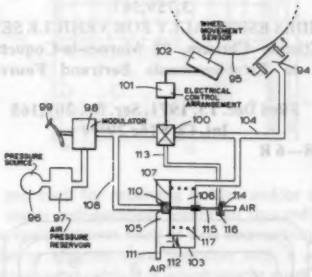
Division of Ser. No. 43,157, June 3, 1970, Pat. No. 3,708,213

Filed July 31, 1972, Ser. No. 276,703

Claims priority, application Great Britain, June 27, 1969, 32,612/69; Aug. 6, 1969, 39,417/69

Int. Cl. B60t *8/00*

U.S. Cl. 303—21 AF 1 Claim



An anti-lock vehicle brake system having a fluid pressure source for producing brake fluid under pressure at the wheel brake so as to apply braking pressure to the wheel in response to manual braking action by the operator. Also provided is a wheel movement sensing device for producing an output function in response to a related wheel rotational movement, and an anti-lock control valve actuatable in response to said output function and effective to divert brake fluid from the wheel brake so as to relieve braking pressure and thereby avoid wheel locking. A fail-safe arrangement is connected in the system for by-passing the anti-lock system in the event of mal-

function of said anti-lock control valve so as to reapply full brake pressure to the wheel brake. The fail-safe arrangement includes a differential pressure member displaceable between a normal position and an operative position in response to a difference in fluid pressure acting on opposite ends thereof. Two different reference pressures act on different surface areas of the pressure member so than when the brake pressure falls to a critical low value the pressure member will be displaced from its normal position to its operative position in which a by-pass connection is established and fluid pressure is permitted to increase at the brake to restore braking pressure as a result of fluid being passed through the actuated control valve.

3,759,586

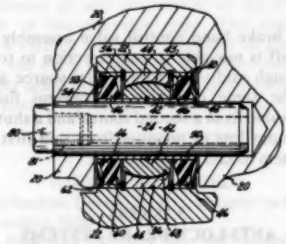
ENDLESS TRACK PIN ASSEMBLY

Robert J. Otto, Grosse Pointe Woods; Alex H. Sinclair, Southfield, both of Mich.; Ralph K. Reynolds, Saratoga, and Robert F. Neargarder, San Jose, both of Calif., assignors to the United States of America as represented by the Secretary of the Army

Division of Ser. No. 17,276, March 6, 1970, Pat. No. 3,680,924. This application May 9, 1972, Ser. No. 251,845

Int. Cl. B62 *55/20*

U.S. Cl. 305—11 **3 Claims**



A track pin assembly for an endless track including a plurality of track shoes pivotably connected by hinges including tapered seals protecting a spherical bearing which is mounted on an adjustable diameter track pin. The track pin is rigidly connected to a portion of one track shoe and a portion of the bearing which is secured to the adjacent track shoe.

3,759,587

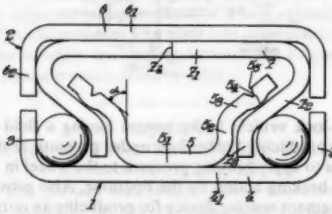
SLIDES ESPECIALLY FOR VEHICLE SEATS

Georges Etienne Christin, 92 Marnes-la-Coquette, France, assignor to Etablissements Bertrand Faure, Puteaux, France

Filed Dec. 13, 1971, Ser. No. 207,168

Int. Cl. F16c *29/04*

U.S. Cl. 308—6 R **12 Claims**



The slide comprises a lower sectional element rigidly fixed to a floor and an upper sectional element supporting a seat. The two sectional elements are mutually slidable lengthwise on interposed ball bearings. The lower sectional element is composed of an inner U-element with a narrow base and two upwardly divergent wings, inclined to the vertical from about 30° to about 100° and of an outer U-element. The upper sectional element has an inverted U-element with two convergent wings enveloping said divergent wings. The upper surface of the bottom and the inner surface of the wings of the outer U-element of the lower sectional element, and the outer surface of the convergent wings of the upper sectional element form the ball race. The slide can be made of thinner sheet metal and is more resistant to dislocation by vertical tilting than previous slides.

3,759,588

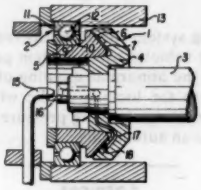
HIGH SPEED HYBRID BEARING COMPRISING A FLUID BEARING & A ROLLING BEARING CONNECTED IN SERIES

William J. Anderson, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 12, 1971, Ser. No. 198,379

Int. Cl. F16c *21/00, 39/04*

U.S. Cl. 308—35 **7 Claims**



A rotating shaft is supported by a fluid bearing and a rolling element bearing coupled in series. Each bearing turns at a fraction of the rotational speed of the shaft. The fluid bearing is preferably conical, thereby providing thrust and radial load support in a single bearing structure.

3,759,589

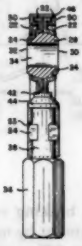
ROD END BEARING ASSEMBLY

Alfreds Rozentals, Fairfield, Conn., assignor to Heim Universal Corporation, Fairfield, Conn.

Filed June 30, 1972, Ser. No. 268,006

Int. Cl. F16c *23/04*

U.S. Cl. 308—72 **7 Claims**



A self-aligning, spherical rod end bearing assembly comprising a first and second housing member, each of said housing members having circular openings therethrough with each opening being defined by a spherical seating portion, a spherical ball rotatably enclosed within said housing member and in alignment with said openings and seated on said seating portions, fastening means fixedly attached to said housing member for threadably supporting said spherical rod end bearing assembly in an operational position, a separate interlocking channel member having integral lip portions adapted

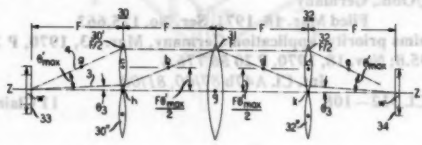
to mechanically grasp holding means formed on both of said housing members to mechanically interlock said housing members together.

3,759,590

RAY INVERTERS FOR MINIMIZING DELAY DISTORTION IN MULTIMODE OPTICAL FIBERS

Jacques Alexis Arnaud, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 11, 1972, Ser. No. 288,032
Int. Cl. G02b 5/14, 27/00
U.S. Cl. 350—96 WG 3 Claims



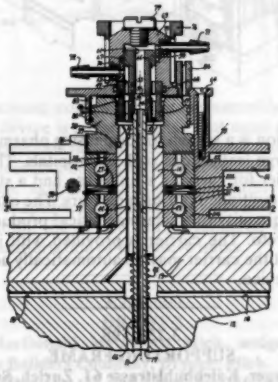
Delay distortion, due to differences in the group velocities of the various modes propagating along a multimode optical fiber, is minimized by the inclusion, along the fiber, or an array of three, equally spaced, converging lenses for inverting the order of the rays representing the various modes. The first and the third of said lenses, whose focal lengths are F/2, have their optical centers located a distance F from the ends of the adjacent fibers, and a distance $F(\theta'_{max}/2)$ from the fiber axis, where θ'_{max} is the maximum angle at which energy is radiated by the fiber. The center lens, whose focal length is F, is equally spaced a distance F from each of the other two lenses, and has its optical center on the guide axis. The physical configuration of the lenses depends upon the radiation pattern at the end of the particular fiber used.

3,759,591

CENTRIFUGE SEAL ASSEMBLY AND METHOD

Herschel E. Wright, Santa Clara, and William J. Cassingham, Campbell, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 30, 1971, Ser. No. 176,028
Int. Cl. F16c 33/72
U.S. Cl. 308—189 R 5 Claims



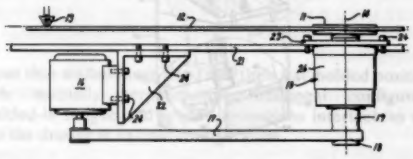
Face type centrifuge sealing assembly having a pair of preloaded anti-friction bearings between the rotating and stationary portions thereof. The inner races of the bearings are secured to the centrifuge rotor, and the outer races are urged apart, or preloaded, by a resilient member disposed between them. In the preferred method of assembly, the outer races are secured to the stationary portion of the centrifuge after they are preloaded.

3,759,592

MEMORY DISC DRIVE SPINDLE

Jerome Albert Carlson, Woodside, Calif., assignor to Bearings, Seals & Gears, Inc., Redwood City, Calif.

Filed Mar. 24, 1972, Ser. No. 237,773
Int. Cl. F16c 33/66
U.S. Cl. 308—187 6 Claims



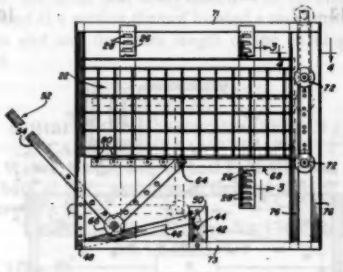
A spindle assembly for memory disc drives has a vertical shaft with an integral pulley at one end for belt drive. The other shaft end provides a memory disc mounting surface having a minimum of face wobble and radial run-out. Within a housing the shaft is supported by a pair of ball bearing assemblies pre-loaded back-to-back, the outer ring of one of the bearings engages a locational surface of a retainer ring seated in the housing. Bearings seals contacting the shaft provide a reservoir for lubricant and minimize air leakage through the spindle assembly.

3,759,593

RACK FOR BOTTLES AND CANS

Glennon P. Walter, R.F.D. 1, Perryville, Mo.

Filed Sept. 29, 1971, Ser. No. 184,779
Int. Cl. A47b 51/00, 81/00
U.S. Cl. 312—312 5 Claims



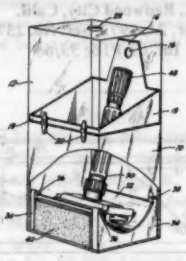
An open top rack for receiving bottles and/or cans to be maintained under refrigeration within an upwardly opening refrigeration compartment such as that conventionally found behind a bar or counter area, together with a specifically designed refrigeration cabinet in which one or more racks may be positioned and supported for vertical shifting therein. The cabinet includes an upper door which may be opened for access to the bottles or cans supported within the associated rack from the above and also a side door through which a rack to be supported in elevated position within the refrigeration cabinet may be placed within the latter. A hand truck may also be provided for transporting a rack, when full, from a storage area to the associated refrigeration cabinet. The cabinet includes rack supporting and elevating structure whereby after placement of an associated rack within the cabinet in a lower position therein the rack may be elevated upwardly in the cabinet into position for ease in dispensing bottles or cans from the rack through the top door opening of the cabinet.

3,759,594

METHOD AND APPARATUS FOR STORING CUTTING IMPLEMENTS

Jack M. Cobb, Box 422, San Juan Capistrano, Calif.

Filed Dec. 2, 1971, Ser. No. 203,956
Int. Cl. A24f *25/00*
U.S. Cl. 312—31 23 Claims



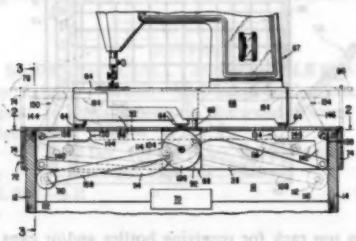
A method and apparatus for storing cutting implements that substantially eliminates deterioration of the cutting edge and metal surfaces adjacent to the cutting edge caused by corrosion of the metal between intermittent uses of the cutting implement. The apparatus comprises a container adapted to receive the cutting implement and support it so that the cutting edges are in close proximity to a body of volatile corosion inhibitor, which can be a wicking material impregnated with a liquid agent or a body of solid agent. One embodiment of the device is especially adapted for storage of a safety razor between intermittent shaving operations.

3,759,595

SEWING MACHINE CABINET

Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,027
Int. Cl. A47b *57/20*
U.S. Cl. 312—27 10 Claims



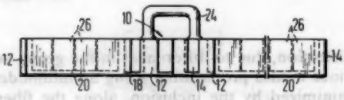
A sewing machine cabinet for providing single level sewing on a machine having the capability of conversion from a flatbed to a cylinder bed mode is disclosed. The sewing machine fits on a support platform pivotably mounted within the frame of the cabinet. In the operable position of the sewing machine the platform is locked in the horizontal position. The cabinet includes a top which is telescopically received about the frame of the cabinet and includes an aperture through which the entire sewing machine may pass. Means are provided for raising or lowering the top relative to the sewing machine bed. When the top is in the uppermost position it is at the same elevation as the work support surface of the machine so as to provide a flatbed mode of operation of the machine and when the top is positioned in its lowermost elevation the machine may be utilized in the cylinder bed mode. The mechanism disclosed for elevating the top is a crank which is manually turned by means of a operator engageable handle and a pair of levers which are connected to one arm each of a pair of bell crank levers pivotally mounted in the frame. Each of the bell crank levers as disclosed includes a rod movable therewith and connected to each of another pair of bell crank levers on the opposite side of the cabinet. One arm of each of the bell crank levers engages the lower surface of the top.

3,759,596

ARRANGEMENT FOR STORING CONTAINERS

Hans Ulrich Bergmeyer; Klaus Beaucamp, both of Bahnhofstrasse 5a; Dieter Jaworek, Beringerweg 6, and Michael Nelboeck-Hochstetter, Bahnhofstrasse 5a, all of 8132 Tutzing/Obb., Germany

Filed Mar. 18, 1971, Ser. No. 125,663
Claims priority, application Germany, Mar. 23, 1970, P 20 13 895.8; Nov. 18, 1970, P 20 56 776.4
Int. Cl. A47b *87/00, 81/00*
U.S. Cl. 312—108 11 Claims



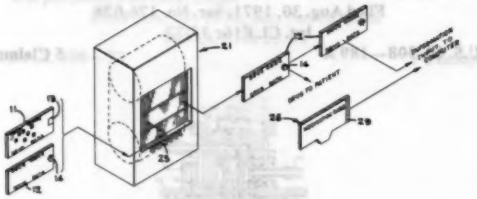
Small containers, in particular containers for receiving pharmaceutical and laboratory chemicals are frequently packed and shipped in container blocks which have receiving bores for receiving the containers. The container blocks are often used in medical and chemical laboratories also for storing the containers.

3,759,597

METHOD AND APPARATUS FOR DISPENSING PHARMACEUTICAL DOSES

Ronald R. Johnston, 255 Union Ave., Campbell, Calif.

Filed Sept. 20, 1971, Ser. No. 181,744
Int. Cl. A47b *6/00, 67/02*
U.S. Cl. 312—234.5 8 Claims



The invention is a system for dispensing pharmaceuticals to patients in large institutions such as hospitals. The system includes a carrier for carrying a unit dose and a storage device for housing a multiplicity of such carriers. The carrier is a card with a small quantity of a pharmaceutical product adhesively attached thereto. The carrier is provided with identification indicia so that the carrier may be automatically accessed from the storage device.

3,759,598

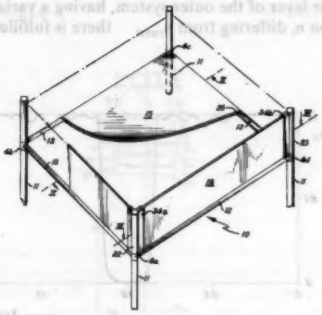
SUPPORTING FRAME

Bruno Limberger, Kalchbuhlstrasse 61, Zurich, Switzerland

Filed June 20, 1972, Ser. No. 264,658
Int. Cl. A47b *43/00*
U.S. Cl. 312—257 A 9 Claims

A supporting frame includes vertical support elements and transverse support elements with polygonal cross-sections.

The elements and members have longitudinal edges disposed within the interior of the supporting frame to provide a supporting surface along at least a portion of the surfaces of said elements or members facing the interior of the frame. Enclosing wall elements include bearing surfaces which conform to



the shape of the supporting surfaces so that the wall elements may be located in a predetermined position on the supporting frame. Positioning means may be provided to hold the enclosing wall elements against the supporting surfaces. Specific types of holding mechanisms are provided in various embodiments.

3,759,599

COLLAPSIBLE STORAGE ASSEMBLY

George E. Swick, Jr., Edina, Minn., assignor to The Cornelius Company, Minneapolis, Minn.

Filed Sept. 27, 1971, Ser. No. 183,913

Int. Cl. A47b *43/00, 47/00*

U.S. Cl. 312—262 **5 Claims**

A fully-enclosed collapsible storage assembly is disclosed. The storage device is constructed so that upon complete collapse all the elements fall into neat alignment with one another without the necessity of physically removing any member. The instant storage assembly has particular utility in that it is completely collapsible into a compact and easily transportable unit. In addition, the device can be rendered secure for the storage or transportation of expensive items.

3,759,600

DRAWER

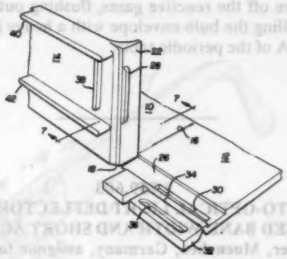
Robert D. MacDonald, Metamora, Mich., assignor to Champion Home Builders Company, Dryden, Mich.

Filed Apr. 27, 1972, Ser. No. 248,262

Int. Cl. A47p *88/00*

U.S. Cl. 312—330 **8 Claims**

A cabinet drawer, complete except for the drawer front is fabricated as a single flat plastic molding, with the drawer sides and rear being initially flat and coplanar with the bottom to permit shipping in a minimum volume condition. A material such as polypropylene permits the various panels to pivot



about thin-walled hinge line from their flat molded position to their mutually perpendicular functional configuration. Molded-in tongue and groove formations interlock to maintain the drawer in its final configuration.

3,759,601

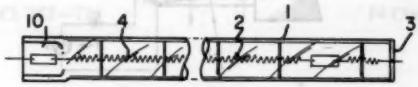
LAMP ASSEMBLY AND METHOD OF MAKING HIGH SILICA LAMPS

Robert P. Bonazoli, and James P. Keenan, both of Hamilton, Mass., assignors to Sylvania Electric Products Inc.

Continuation of Ser. No. 741,066, June 28, 1968, abandoned. This application Mar. 5, 1971, Ser. No. 121,525

Int. Cl. H01j *9/18*

U.S. Cl. 316—19 **1 Claim**



A tubular tip-less lamp is manufactured by exhausting and filling the lamp through an open end of an extra long tubular envelope, the other end being sealed. The envelope is then press-sealed at a section thereof located a short distance from the open end and the extra length of the envelope is then removed.

3,759,602

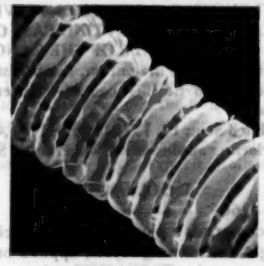
INHIBITING D-C NOTCHING EFFECT IN INCANDESCENT LAMP FILAMENTS

John L. Walter, Scotia, and Michael F. X. Gigliotti, Mechanicville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,022

Int. Cl. H01j *9/38*

U.S. Cl. 316—20 **2 Claims**



Process and product produced thereby wherein the problem of "d-c notching" and resulting premature failure of tungsten,

tantalum or molybdenum metal filaments for miniature lamps operating below 2400°C is avoided by steps which include: removal of reactive gases including residual chemically available oxygen and nitrogen by high vacuum, heating the filament to help drive off the reactive gases, flushing out at least once and back-filling the bulb envelope with a heavy inert gas from Group VIIIA of the periodic table.

3,759,603

ACOUSTO-OPTICAL LIGHT DEFLECTOR HAVING INCREASED BAND WIDTH AND SHORT ACCESS TIME

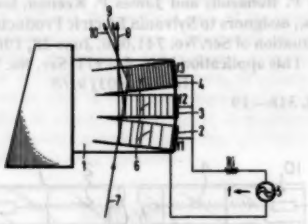
Hans Eschler, Muenchen, Germany, assignor to Siemens Aktiengesellschaft

Filed Nov. 24, 1971, Ser. No. 201,652

Claims priority, application Germany, Dec. 15, 1970, P 20 61 694.8

Int. Cl. G02f 1/32

U.S. Cl. 350—161 **10 Claims**



An acousto-optical light deflector employs a crystal as a sound medium which is energized by way of a piezo-electric trandsducer with ultrasonic waves to deflect a light beam incident approximately parallel with the sound wave fronts as a function of the ultrasonic frequency. The deflector also comprises a control apparatus for supplying the piezo-electric transducer with a controllable variable frequency and is charactrized by the provision of several piezo-electric transducers which are designed for consecutive frequency ranges and which are juxtaposed on the sound medium.

3,759,604

INTERFERENCE FILTER REFLECTING A CERTAIN WAVE LENGTH BAND WITHIN A GIVEN WAVE LENGTH RANGE WHILE LETTING PASS OTHER WAVE LENGTH BANDS OF THE RANGE

Alfred Thelen, Triesen, Furstentum, Liechtenstein, assignor to Balzers Patent-und Beteiligungs AG, Balzers, Furstentum, Liechtenstein

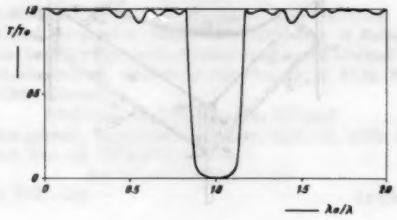
Filed Sept. 17, 1971, Ser. No. 181,433

Claims priority, application Switzerland, Sept. 18, 1970, 13919/70

Int. Cl. G02b 5/28

U.S. Cl. 350—166 **5 Claims**

The filter comprises a plurality of alternately high and low refracting light transmitting layers, applied on a light transmitting support, and reflecting a certain wave length band within a given wave length range while letting pass the other wave length bands of the range. The filter includes a periodically symmetrically constructed inner system between two reflection-reducing outer systems each constructed from a group of alternating high and low reflecting layers for the attenuation of undesired secondary reflection bands. The layers of one outer systm group have the same constant index of refraction n_{const} as a first layer group of the inner system. For any other layer of the outer system, having a variable index of refraction n_i differing from n_{const} there is fulfilled the condition that the absolute value of the product $n_{const} - n_i \times d_i$ is less than this product for those inner system layers having an index of refraction differing from n_{const} and wherein d_i is the layer thickness. The constant index of refraction of one group of layers of an outer system may be equal to the index of refraction of the low refracting layers of the inner system or to the index of refraction of the high refracting layers of the inner system.



3,759,605

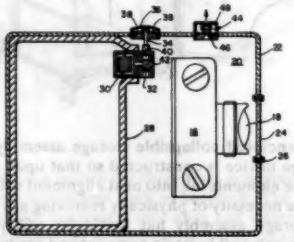
METHOD AND APPARATUS FOR HOUSING UNDERWATER OPTICAL INSTRUMENTS

Quentin S. Johnson, 703 W. Mettletree Rd., Sterling, Va.

Filed Oct. 29, 1971, Ser. No. 193,903

Int. Cl. G02b 27/00

U.S. Cl. 350—179 **6 Claims**



An underwater optical method and apparatus in which the pressure within a sealed optical chamber is balanced with external hydrostatic pressure by filling the optical compartment with a pressurized gas having a minimum index of refraction. The focal length of a lens within the optical compartment remains nearly constant throughout a range of changing internal pressure because of the low index of refraction of the gas (typically helium) as compared with other gases. The low-index gas is supplied from a pressurized gas bottle carried by the device.

3,759,606

HIGH MAGNIFICATION PROJECTION LENS

Lynn L. Van Orden, Holley, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Sept. 5, 1972, Ser. No. 285,978
Int. Cl. G02b 9/64
U.S. Cl. 350—214 **5 Claims**

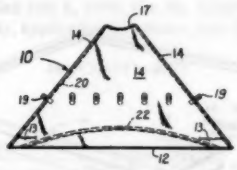
An inverse telephoto lens having ten elements, none in contact, is useful as a microfilm projection or camera lens, having a magnification ratio of 180:1 and numerical aperture of 0.42.

3,759,607

OCCULT ILLUMINATOR SYSTEM

John P. Boyle, 5281 Newport, Detroit, Mich.

Filed Oct. 1, 1971, Ser. No. 185,674
Int. Cl. G02b 5/10
U.S. Cl. 350—293 **4 Claims**



In an occult illuminator system, an occult illuminator device and method are disclosed comprising, inter alia, providing a hollow chamber having window means therein so that the interior thereof can be seen by a person as a viewer looking into said chamber through said window means, said chamber having light reflective material lining the interior thereof, at least one half of which is crinkled metal foil, illuminating the interior of said chamber and reflecting the light therein off said lining and through said window means to the eye of said viewer, whereby to form images which appear in said chamber in the mind of said viewer.

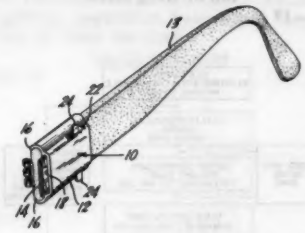
3,759,608

EYEGLASS FRAME ADJUSTER

William B. McVeigh, Teaneck, N.J., assignor to Yvonne C. McVeigh and William B. McVeigh, Teaneck, N.J.

Filed Mar. 2, 1972, Ser. No. 231,188
Int. Cl. G02c 5/14
U.S. Cl. 351—113 **8 Claims**

As described herein, an eyeglass frame adjuster comprises a slidable adjustment spring mounted within a stationary casing which is either clamped on the eyeglass frame arm or formed as an integral part of the arm. The adjustment spring includes calibrated teeth for releasably engaging serrations impressed in the casing. Angular adjustments in the arms of the eyeglass frame are made by varying the distance between the ends of the frame arms and the end portions of the frontal lens carrying frame by moving the spring lengthwise within the casing toward and away from the end portion of the frontal lens carrying frame.

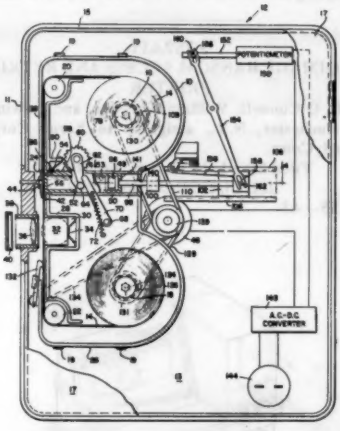


3,759,609

SYSTEM FOR UNIFORMLY COATING EXPOSED MOTION PICTURE FILM WITH PROCESSING FLUID

Vaito K. Eloranta, Needham, and Benjamin C. Ruggles, Gloucester, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 772,789, Nov. 1, 1968, Pat. No. 3,623,417.
This application Aug. 23, 1971, Ser. No. 173,839
Int. Cl. G03b 23/02
U.S. Cl. 352—72 **14 Claims**



A projector, and system employing same, for receiving a motion picture film handling cassette having a processing station and a reel to which one end of the film strip is connected. The projector has an arrangement for driving the reel so as to effect the progressive advancement of the film strip through the processing station at a constant speed. Method practiced is also covered.

ERRATUM

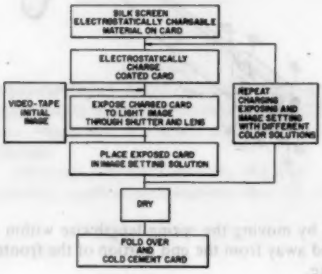
For Class 353—104 see:
Patent No. 3,759,482

3,759,610

IDENTIFICATION STRUCTURE AND METHOD OF PRODUCTION

Thomas J. McVittie, Bloomfield Hills, Mich., assignor to Marlin & Company Systems Engineers Inc., Royal Oak, Mich.

Filed June 7, 1971, Ser. No. 150,381
Int. Cl. G03g *13/22*
U.S. Cl. 355—17 **11 Claims**


SILK SCREEN ELECTROSTATICALLY CHARGABLE MATERIAL ON CARD
ELECTROSTATICALLY CHARGE COATED CARD
VIDEO-TAPE INITIAL IMAGE
EXPOSE CHARGED CARD TO LIGHT IMAGE THROUGH SHUTTER AND LENS
REPEAT CHARGING EXPOSING AND IMAGE SETTING WITH DIFFERENT COLOR SOLUTIONS
PLACE EXPOSED CARD IN IMAGE SETTING SOLUTION
DRY
FOLD OVER AND COLD CEMENT CARD

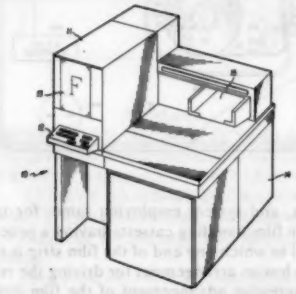
A method of producing an identification card having identification data sandwiched between two halves of a fold-over plastic card. The method consists of coating one half of the card with a substance capable of taking an electrostatic charge and coating the second half with a cold solvent cement; charging and exposing the first half; fixing the image and drying the card; and folding the card to cohere the cement coated surface of the second half to the data-carrying first half. To produce multicolored cards the steps of charging, exposing, and fixing are repeated, the fixing step with solutions having different colored particles; for the re-exposing steps the image may be stored electronically. The card is self-destructing in that separating the halves of the card destroys the image.

3,759,611

MICROIMAGE RANSOM ACCESS AND RETRIEVAL PRINTER

Richard P. O'Connell; William Kingsley, and Edwin Zucker, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 1, 1972, Ser. No. 249,281
Int. Cl. G03b *27/46, 27/70*
U.S. Cl. 355—43 **4 Claims**



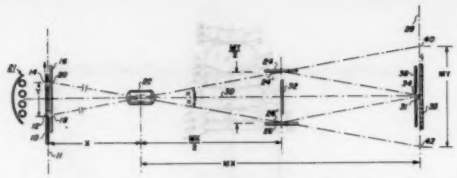
A microfiche viewer and copier provides for automatic random access to a desired microfiche card from a library, and automatic selection of a frame thereof for viewing. Copies of the selected frame or of a following sequence of frames may be made. Identification of each microfiche card and frame copied, the number of copies made, and the user is obtained and stored for billing and copyright royalty computation.

3,759,612

OPTICAL SYSTEM

Armistead Wharton, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 13, 1971, Ser. No. 207,090
Int. Cl. G03b *27/44*
U.S. Cl. 355—46 **7 Claims**



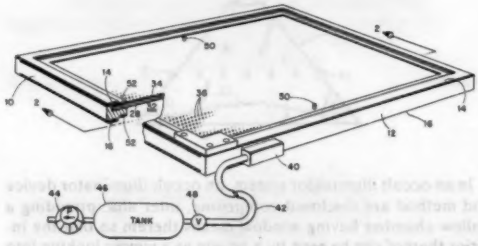
An optical system for simultaneously superimposing optical images from two separated object means on a single common line at the imaging point is disclosed. The system includes a fixed object lens and two plane reflecting means located equidistant from the lens center and the imaging plane, the reflecting means being mounted geometrically parallel to each other, optically parallel to the optic axis and equally spaced therefrom. The object means may be transparencies or opaque documents. The system may be utilized in a slit-scanning mode of operation or can be used to project and superimpose full frame images or areas in the imaging plane. The system may also be utilized to generate two identical images from a single original.

3,759,613

PHOTOPLOTTER CASSETTE

Richard E. Denis, Beverly, Mass., assignor to Computervision Corporation, Burlington, Mass.

Filed May 5, 1971, Ser. No. 140,465
Int. Cl. G03b *27/60*
U.S. Cl. 355—73 **8 Claims**



A cassette adapted to be loaded with either or both photographic film or a glass plate for use in a light-tight photoplotter. The cassette has vacuum drawing means for holding the film on one side of the cassette and conventional means for holding the glass plate on the other side of the cassette. The cassette can be mounted in the photoplotter with either side facing the lens.

3,759,614

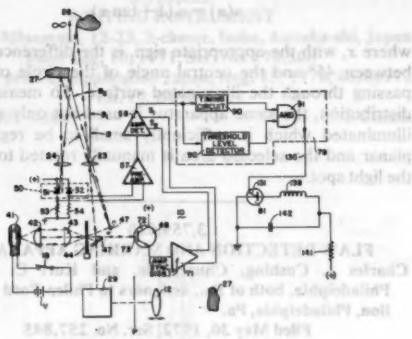
DUAL PHOTOCELL RANGE FINDER APPARATUS

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 10, 1971, Ser. No. 114,279
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **5 Claims**

An automatic range finder apparatus is disclosed which includes two spaced photosensitive devices, having electrical parameters which vary respectively as a function of the brightness of light incident thereon, and circuitry coupled to

the devices for producing a signal which varies in accordance with changes in the magnitude of the parameters of the first and second photosensitive devices, the signal having a first predetermined magnitude when the magnitudes of the parameters of the devices are substantially equal and a second



predetermined magnitude when the parameters are at predetermined relative magnitudes. The apparatus further includes means responsive to the signal when it varies from the first predetermined magnitude to the second predetermined magnitude for determining the distance of an object relative to a reference plane.

3,759,615

METHOD AND APPARATUS FOR ELECTROOPTICAL MEASUREMENT OF THE DISTANCE FROM LIGHT-REFLECTING OBJECTS

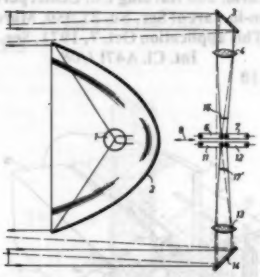
Richard Loewe, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany

Filed July 6, 1970, Ser. No. 52,648

Claims priority, application Germany, July 5, 1969, P 19 34 186.7

Int. Cl. G01c *3/08*

U.S. Cl. 356—4 **10 Claims**



A photoelectric range finder wherein the differential circuit contains four photoelectric receivers connected in twos in two branches of the circuit. Each receiver of one branch is paired with a receiver of the other branch and the two pairs of receivers are mirror symmetrical to each other. Each of two mirror symmetrical beams of light which is reflected by the selected portion of an object is directed against one of the two pairs of receivers. The circuit is balanced when exactly one-half of each beam impinges upon each of the respective pair of receivers regardless of eventual lack of uniformity of light intensity in various parts of the light beams. The circuit can be used to adjust the position of an objective in a camera or projector.

3,759,616

ELECTRO-OPTICAL DISTANCE MEASURING INSTRUMENT

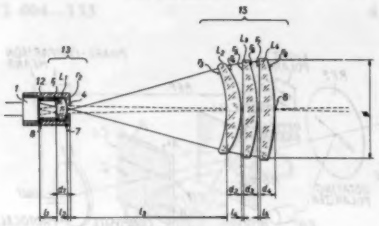
Klaus Hildebrand, Heerbrugg, Switzerland, assignor to Wild Heerbrugg Aktiengesellschaft, Heerbrugg, Switzerland

Continuation-in-part of Ser. No. 827,791, May 26, 1969, abandoned. This application July 14, 1971, Ser. No. 162,355

Claims priority, application Switzerland, May 28, 1968, 7870/68; Oct. 15, 1968, 15412/68

Int. Cl. G01c *3/08*

U.S. Cl. 356—5 **7 Claims**



An electro-optical distance measuring instrument embodying a non-coherent light emitting diode, the light beam of which is directly amplitude-modulated by an oscillator and delivered to a receiver through the agency of means for mixing the modulation phases, a transmitting objective, and a reflector arranged at the remote end of the measuring path. The aforementioned means for mixing the modulation phases is arranged with respect to the transmitting objective such that the transmitting objective is fully illuminated and the transmitting objective produces an image of the aforementioned means at an infinite distance.

3,759,617

METHOD AND APPARATUS FOR GEOCHEMICAL SURVEYING

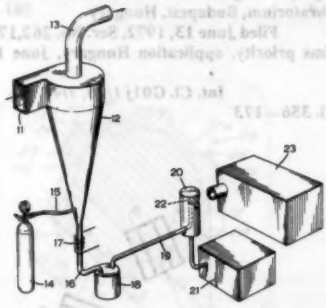
Anthony Rene Barringer, Willowdale, Ontario, Canada, assignor to Barringer Research Limited, Rexdale, Ontario, Canada

Filed May 3, 1972, Ser. No. 250,016

Claims priority, application Canada, May 7, 1971, 112413

Int. Cl. G01n *1/00*; G01j *3/00, 3/30*

U.S. Cl. 356—36 **26 Claims**



A method and apparatus for performing a rapid geochemical survey over an area of the earth consisting of collecting and concentrating atmospheric particulates, preferably transferring the particulates into a stream of an inert carrier gas, heating the particulates to break down organic particles into particles of smaller size and vapours, removing from the stream inorganic particles which generally are of relatively high mass, and then analyzing the remaining organic particles and vapours to detect the presence of elements or compounds indicative of underlying geological conditions.

3,759,618
METHODS OF AND APPARATUS FOR EFFECTING OPTICAL MEASUREMENT AND ANALYSIS

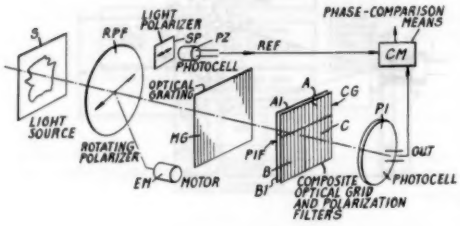
Gordon Leonard Rogers, and Noel William Frank Stephens, both of Birmingham, England, assignors to National Research Development Corporation, London, England

Filed July 29, 1971, Ser. No. 167,280

Claims priority, application Great Britain, July 31, 1970, 37,145/70

Int. Cl. G01b 11/00

U.S. Cl. 356—156 **18 Claims**



Optical analysis method and apparatus comprising a single photoelectric sensing means upon which the shadow of an optical grating is continuously cast through a composite grid having a plurality, preferably three, of different discrete sub-sections each having the same line repeat dimension and orientation but whose lines are progressively shifted relatively to those of the other sub-sections by chosen fractions of the line repeat dimension, and means for simultaneously casting the shadow of the optical grating on each of the sub-sections. There is also provided means for varying sinusoidally the intensity of the grating shadow incident upon each of the grid sub-sections so that the respective maxima and minima of the variations at such grid sub-sections are equally phase-displaced over the variation cycle, while means compares the resultant signal output from said photocell with a reference signal synchronised with the scanning cycle.

3,759,619
MEASUREMENT OF COLOUR OF SPHERICAL OS QUASI-SPHERICAL SURFACES

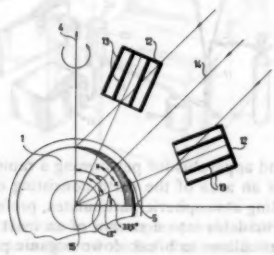
Andras Podmaniczky, and Barnabas Kiss, both of Budapest, Hungary, assignors to Merestechnikai Kozponti Kutato Laboratorium, Budapest, Hungary

Filed June 13, 1972, Ser. No. 262,172

Claims priority, application Hungary, June 18, 1971, ME 1382

Int. Cl. G01j 1/06, 3/48

U.S. Cl. 356—173 **5 Claims**



The color of a substantially spherical surface, such as that of a fruit, is measured by rotating the object about a vertical axis and projecting on the surface of the object, downwardly at 45°, an area of light that extends from the zenith to the equator of the object and is generally spherical triangular in shape, but differs from a spherical triangle in that the arc length s of the circles of latitude falling between the boundaries of the illuminated area is related as follows to the arc length s_0 of the 45° circle of latitude:

$$s(x) = s_0(1 + \tan x)$$

where x, with the appropriate sign, is the difference in angle between 45° and the central angle of the circle of latitude passing through the illuminated surface. To measure color distribution, the same apparatus is used but only an area is illuminated which is sufficiently small to be regarded as planar and the selected area is manually rotated to underlie the light spot.

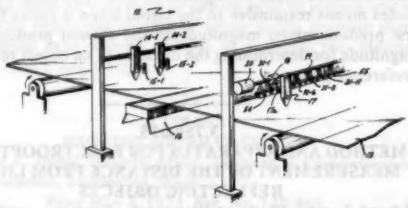
3,759,620
FLAW DETECTION AND MARKING APPARATUS

Charles J. Cushing, Churchville, and Kurt C. Schwind, Philadelphia, both of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 30, 1972, Ser. No. 257,845

Int. Cl. G01n 21/16

U.S. Cl. 356—200 **14 Claims**



A flaw detection and marking apparatus for glass including an automatically actuated backup marking device operable to replace any one of a group of primary marking devices in the event of malfunction thereof.

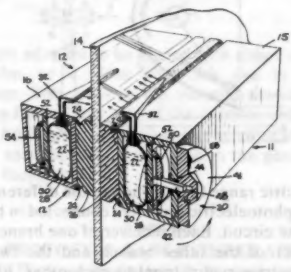
3,759,621
WINDOW CLEANING APPARATUS

Joseph P. De Carlo, 200 Harding Ct., Centerport, N.Y.

Continuation-in-part of Ser. No. 21,050, March 19, 1970, abandoned. This application Oct. 7, 1971, Ser. No. 187,369

Int. Cl. A47l 1/08

U.S. Cl. 401—10 **4 Claims**



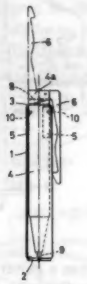
Apparatus for simultaneously cleaning both sides of a window comprises master and slave magnetic cleaning units. When the cleaning units are aligned on opposite sides of the window, magnetic attraction causes the slave cleaning unit to press against and to slide on the outside of the window in response to corresponding movement of the master cleaning unit on the inside of the window. Self-contained cleaning fluid

reservoirs in alternative embodiments of the cleaning units controllably dispense cleaning fluid onto the window surfaces in response either to gravity forces, controlled by orientation of the master unit with respect to the vertical, or to magnetic biasing means actuated by a control means on the master unit.

3,759,622
WRITING INSTRUMENT

Naokichi Miyamoto, 12-23, 3-chome, Isobe, Annaka-shi, Japan

Filed Aug. 10, 1971, Ser. No. 170,508
Claims priority, application Japan, Aug. 15, 1970, 45/80972
Int. Cl. B43k *24/04*
U.S. Cl. 401—104 **9 Claims**



A writing instrument comprises a writing barrel carrying a projecting portion slidably inserted in a sheath tube. The barrel is movable between a retracted, inoperative position and an extended operative position. The tube is crimped at its ends to retain the projecting portion and a clip is pivotally attached to an end of the barrel which projects from the tube in the inoperative position, the clip being retracted in the sheath tube when the barrel is brought to its extended operative position.

3,759,623
STAND

Kurt Hesse, 38 Waterfohr, Lemgo-Lippe, Germany

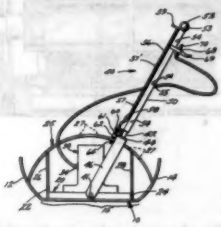
Filed Mar. 10, 1971, Ser. No. 123,101
Claims priority, application Germany, Mar. 11, 1970, G 70 08 903.1
Int. Cl. F16b *7/00*
U.S. Cl. 403—375 **6 Claims**

A stand comprising several sections connected together, the sections being tubular at least at their ends, a connecting bolt engaging with a clamping action in the ends of adjacent sections, said bolt having at least one naturally resilient clamping member located therearound, which enlarges the cross-section of said bolt, the clamping member being adapted to press against the inner wall of a section, and having several outwardly projecting clamping surfaces.

3,759,624
TRENCH COMPACTOR

Doran J. Hundey, Riverdale, and Robert B. Naru, Edmore, both of Mich., assignors to Edmore Tool and Grinding, Inc., Edmore, Mich.

Filed Apr. 19, 1971, Ser. No. 135,306
Int. Cl. E01c *19/35*
U.S. Cl. 404—133 **4 Claims**

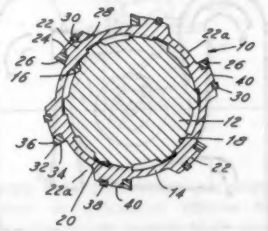


A compactor is provided for use in tamping earth or the like in a relatively narrow and deep trench such as used for burying telephone cables. The compactor includes a shoe portion having upwardly curved ends and a handle which is pivotably mounted to the compactor such that it can swing to either side of the vertical axis of the compactor to facilitate its operation in either direction along the trench. The handle is additionally collapsible and extendable such that it can be employed in trenches of varying depths. A vibrator mounted to the compactor to provide tamping forces can be of the pneumatic type which is controlled by the operator to vary the tamping action by means of a control valve mounted on the handle of the compactor.

3,759,625
CUTTING TOOL

Norman H. Iversen, P. O. Box 178, Lathrup Village, Mich.

Filed Sept. 15, 1970, Ser. No. 72,379
Int. Cl. B23d *1/28, 77/02, 77/06*
U.S. Cl. 408—188 **9 Claims**



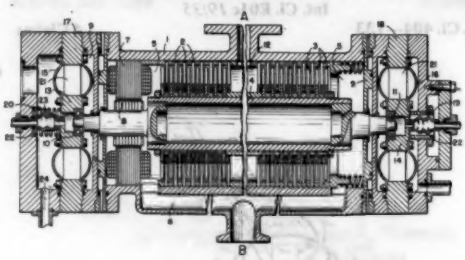
A cutting tool such as a reamer or a boring tool having a plurality of cutting edges for machining the inner cylindrical surface of a hole and also having a plurality of guide edges or surfaces trailing and spaced circumferentially from the cutting edges and adapted to engage the cylindrical surface machined by the cutting edges to stabilize the tool radially without interferring with the cutting action of the cutting edges.

3,759,626

BEARING ARRANGEMENT FOR MOLECULAR AND TURBO MOLECULAR PUMPS

Willi Becker, Braunfels/L., Germany, assignor to Arthur Pfeiffer Vakuumtechnik GmbH, Wetzler, Germany

Filed Oct. 22, 1971, Ser. No. 191,759
Claims priority, application Germany, Oct. 22, 1970, P 20 52 120.4
Int. Cl. F01d 1/36
U.S. Cl. 415—90 11 Claims



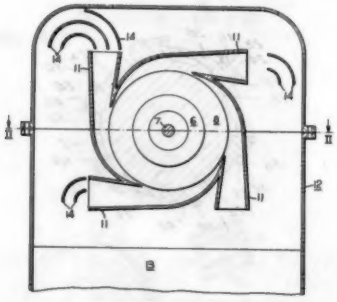
In molecular and turbo molecular pumps a bearing arrangement is provided for the member which rotates the rotor discs of the pump and includes a pair of axially spaced bearing heads each supporting a bearing for the rotating member. The bearing heads are supported from the pump casing by radially extending disc-like spring members which have a spring stiffness in the radial direction which is greater than the spring stiffness in the axial direction. Further, one of the bearing heads is biased toward the other by an axially arranged spring so that the play of the bearings is made zero. Oil is supplied to the bearings and is prevented from entering the space containing the stator and rotor discs. Damping elements are provided in association with the radially extending spring members or, alternatively, damping material is coated on the spring members.

3,759,627

COMPRESSOR ASSEMBLY

Arnold H. Ehlinger, Hales Corners, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 14, 1972, Ser. No. 226,160
Int. Cl. F04d 29/44, 29/58, 29/56
U.S. Cl. 415—178 2 Claims



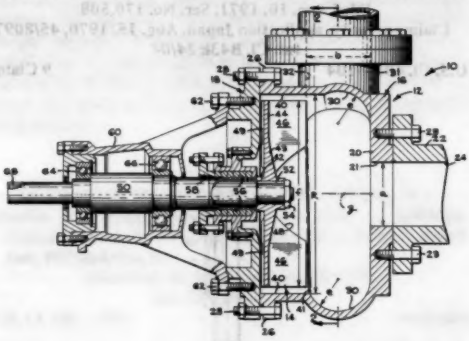
An air compressor assembly including a centrifugal impeller discharging air through a vaneless diffuser and a plurality of conical diffusers into an air collecting plenum. An air cooler is connected to the open end of the plenum to receive the air therefrom.

3,759,628

VORTEX PUMPS

Dennis D. Kempf, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 104,315, Jan. 6, 1971. This application June 14, 1972, Ser. No. 262,913
Int. Cl. F04d 29/44, 7/00
U.S. Cl. 415—213 A 15 Claims



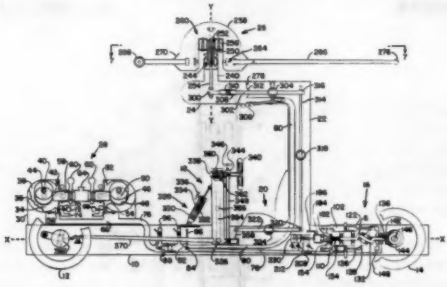
A vortex pump casing has a generally toroidal inner wall of constant cross-sectional radius with a cylindrical axially offset impeller recess intersecting the toroidal wall. The toroidal wall is actually a volute and the impeller recess intersects the volute at an obtuse angle that increases progressively from the maximum major radius of the volute to the minimum (cutwater) major radius of the volute. Formulae for various design features, including the impeller vane depth, the radius to the volute cutwater, the impeller diameter, and the optimum number of impeller blades are presented, based on the diameter of the inlet port of the volute.

3,759,629

COMBINED LAND AND AIR VEHICLE

John Abramopaulos, 24-29 42nd St., Long Island City, N.Y.

Division of Ser. No. 823,639, May 12, 1960, Pat. No. 3,612,441. This application Apr. 14, 1971, Ser. No. 134,081
Int. Cl. B64c 27/18
U.S. Cl. 416—20 4 Claims



A land air vehicle comprising a chassis in which is journalled a pair of front steerable wheels and rear driven wheels, a superstructure mounted to said chassis journalling a helicopter rotor assembly, a compressor for creating a supply of pressurized air, a pneumatic motor coupled to the rear wheels, which motor is driven by the compressed air, and a jet propulsion system coupled to the rotor assembly also driven by said compressed air. The vehicle includes control means

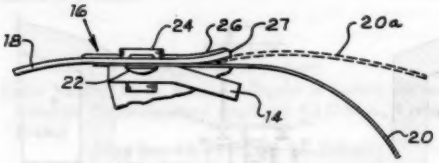
for selectively operating one or the other of the pneumatic motor or jet propulsion system in manual or automatic operation.

3,759,630

FLEXIBLE BLADED FAN WITH IMPROVED REINFORCING

Willard Anton Freeman, and Donald Jean Hartley, both of Indianapolis, Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,540
Int. Cl. F04d *29/38*
U.S. Cl. 416—132 **3 Claims**



A fan having curved flexible resilient blades which decamber with an increase in rotational speed and aerodynamic forces. Each of the blades has an overlying reinforcing strip in partial contact with a trailing sheet, which decambers as the rotational speed increases. The reinforcing strip and trailing sheet, which is of significantly thinner cross-section, are joined to each other and to a supporting arm extending from a central hub. The reinforcing strip preferably has a curved trailing decamber limiting portion and a curved bending limiting portion disposed along the inner side edge of the reinforcing strip and its decamber limiting portion. As the trailing sheet decambers it also makes progressive contact with the reinforcing strip in a direction toward the inner side edge of the sheet, thus reducing stress concentration at the intersection of the inner side edge of the sheet and the decamber limiting portion of the reinforcing strip.

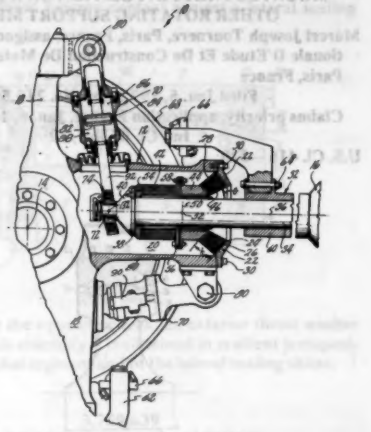
3,759,631

COMPOUND BEARING FOR CONNECTING A HELICOPTER BLADE TO A HELICOPTER ROTOR

Robert C. Rybicki, Trumbull, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 5, 1972, Ser. No. 268,965
Int. Cl. B64c *27/38*
U.S. Cl. 416—134 **14 Claims**

A compound bearing for connecting a helicopter blade to a helicopter rotor, such as connecting the blade end-shaft to the rotor connected lead-lag damper so as to accommodate a large degree of blade pitch change motion and part misalignment due to other blade motions, which bearing is maintained within a minimum space envelope. The compound bearing includes a slip-type journal bearing enveloping the blade end-shaft and a spherical, laminated elastomeric bearing envelop-



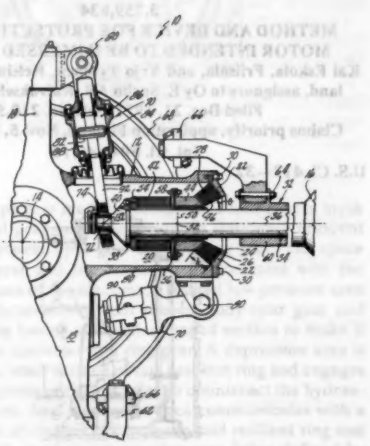
ing the journal bearing and connected to the rotor connected part, such as the lead-lag damper.

3,759,632

ARTICULATED HELICOPTER ROTOR

Robert C. Rybicki, Trumbull, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 5, 1972, Ser. No. 268,964
Int. Cl. B64c *27/38*
U.S. Cl. 416—134 **23 Claims**



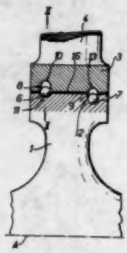
One or more helicopter blades are supported from a helicopter rotor in articulated fashion by a spherical elastomeric bearing which permits blade motion about the blade lead-lag axis and which includes a piston-cylinder type lead-lag damper. Lead and lag stops positioned selected distances from the blade shaft so that during rotor start-up operation, the uncentered blade will increase in lead angle to eventually be supported by the lag stop and the bottomed-out damper piston and so that, during rotor braking operation, the uncentered blade will increase in lead angle and eventually be supported by the lead stop and the bottomed-out lead-lag damper. This construction does not include a centering bearing.

3,759,633

DEVICE FOR LOCKING BLADES OR OTHER SLIDINGLY MOUNTED PARTS IN POSITION ON A ROTOR OR OTHER ROTATING SUPPORT MEANS

Marcel Joseph Tournere, Paris, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed Jan. 5, 1972, Ser. No. 215,561
Claims priority, application France, Jan. 6, 1971, 7100227
Int. Cl. B63h 1/20
U.S. Cl. 416—220 5 Claims



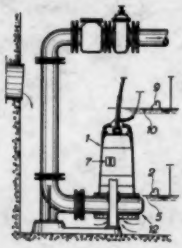
A device for the axial locking of a blade in position in a slot made in a rotor in an engine with a horizontal axis, the device comprising two balls each retractable within and movable under the influence of gravitational and centrifugal forces along one of two recesses extending radially, one of which is made in the rotor facing a blade root cavity and the other of which is made in the blade root facing a cavity in the rotor, the cavities having a depth which is less than the diameter of the balls.

3,759,634

METHOD AND DEVICE FOR PROTECTING A PUMP MOTOR INTENDED TO BE IMMERSED IN LIQUID

Kai Eskola, Friisala, and Yrjo Tyllinen, Helsinki, both of Finland, assignors to Oy E. Sarlin AB, Kaivoksela, Finland

Filed Dec. 21, 1971, Ser. No. 210,522
Claims priority, application Finland, Nov. 5, 1971, 3168
Int. Cl. F04b 49/10
U.S. Cl. 417—32 7 Claims



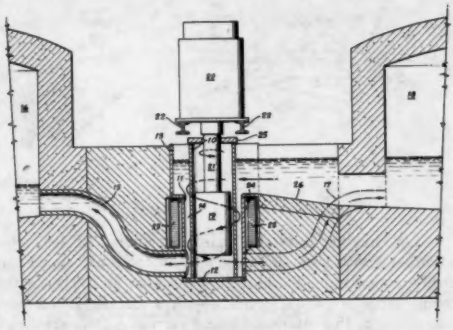
The object of the present invention is a method for protecting a pump motor which is submersible in a liquid against excessive heating, in which method at least one means measuring the liquid level height, such as a float, is placed in the liquid to be pumped, in the motor circuit a switch is inserted which is acted upon by the means measuring the liquid level in such manner that the motor circuit is broken when the liquid level descends to a predetermined lower limit height, in the motor circuit an excess current protection means is placed, which breaks the motor circuit if the motor is overloaded, and in connection with the motor a heat sensitive means is provided, which breaks the circuit of the motor if the motor temperature rises to a predetermined value. According to this invention the heat sensitive means completes the motor circuit for its own part when the motor temperature falls below a predetermined value and that in the motor circuit a switch is placed on which a means measuring the liquid level acts so that the motor starts when the liquid level rises to a predetermined upper limit level, if the motor temperature is below a predetermined value.

3,759,635

PROCESS AND SYSTEM FOR PUMPING MOLTEN METAL

Melvin A. Carter, Livermore, and Theodore D. Steinke; Donald C. Kush, both of Pleasanton, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 16, 1972, Ser. No. 235,441
Int. Cl. H02n 4/20
U.S. Cl. 417—50 18 Claims



This invention relates to an electromagnetic pumping system for molten metal which comprises a device for generating a rotating, helically shaped electromagnetic field which induces downwardly directed molten metal flow in the annular space defined by two concentric upstanding cylindrical surfaces. A preferred embodiment of the invention relates to a process and system for pumping molten metal, wherein one discharge conduit recycles molten metal to a chamber at a predetermined flow rate and when the recycling is completed, the flow rate is substantially increased, thereby pumping metal to a second chamber without increasing substantially the molten metal flow to said first container.

3,759,636

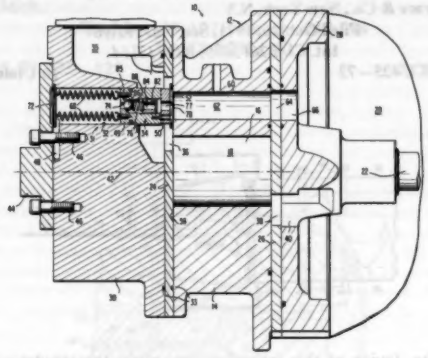
COMPOSITE VARIABLE OIL PRESSURE RELIEF AND COMPRESSOR UNLOAD VALVE ASSEMBLY

Donald D. Schaefer, Farmington, Conn., and James R. Morin, Sr., Springfield, Mass., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Mar. 13, 1972, Ser. No. 234,123
Int. Cl. F04b 49/02, 49/08
U.S. Cl. 417—281 13 Claims

An axially shiftable piston is pressure biased by screw compressor oil pressure to a position closing off communication between the intake and the discharge sides of an axial screw compressor but is biased to the unload position by the compressor discharge and a biasing spring acting on the same. The

piston carries a fixed or variable oil pressure relief valve to vary the compressor oil pressure with change in compressor



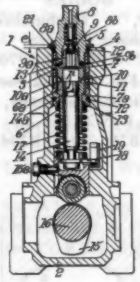
thrust load which, in turn, varies with the compressor discharge pressure.

3,759,637

INJECTION PUMPS

Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale De Mechanique Appliquee S.I.G.M.A., Venissieux, France

Filed Dec. 16, 1971, Ser. No. 208,831
Int. Cl. F04b *7/04*
U.S. Cl. 417—499 **7 Claims**



A multicylinder fuel injection pump comprising a casing, hydraulic heads arranged in the housings of the casing and pistons adapted to slide in cylinders borne by the hydraulic heads. The hydraulic head comprises a delivery connector screwed into a bush and blocking the cylinder. The delivery connector comprises a collar adapted to serve as an axially stop for the hydraulic head against the casing. The invention is useful for automobile in-line fuel injection pumps.

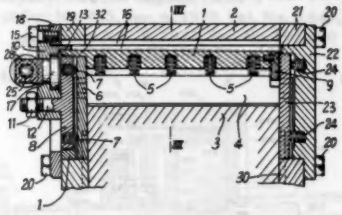
3,759,638

SEALING DEVICES FOR ROTARY PISTON MACHINES

Maurice G. Brille, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France

Filed Dec. 27, 1971, Ser. No. 212,176
Claims priority, application France, Jan. 5, 1971, 7100086
Int. Cl. F01c *19/02*; F04c *15/00*
U.S. Cl. 418—128 **10 Claims**

A sealing device for rotary piston machines of the type having radial segments fitted into cavities in the stator, characterized in that this device is comprised of a detachable assembly formed by a segment holder support, a lateral shim, a radial segment and their resilient bearing means, said assembly being fitted into a corresponding cylindrically-walled cavity provided in the stator and a lateral cheek, said assembly coming into resilient bearing contact against a lateral sealing



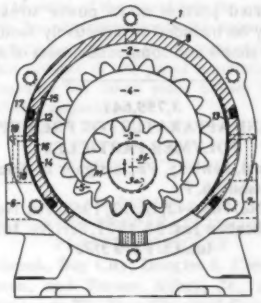
shim situated in the opposite cheek, an exterior thrust washer ensuring that this assembly is maintained in resilient juxtaposition with the radial segment and of the lateral sealing shims.

3,759,639

HALF-MOON SHAPED MACHINE

Hans Molly, Dr. Eugen-Essig-Strasse 48, Malsch, Germany

Filed Nov. 22, 1971, Ser. No. 201,048
Int. Cl. F01c *1/10*; F04c *1/06*
U.S. Cl. 418—170 **9 Claims**



A crescent type gear machine comprises a spur gear in mesh with an internal gear in a housing and a stationary crescent shaped body between spur gear and the ring gear. The space between ring gear and the housing communicates with the high pressure area of the machine, a limited low pressure area being formed between crescent shaped body spur gear and ring gear. A ring having a meander shaped section to make it radially resilient encircles said ring gear. A depression area is provided on the inner surface of said resilient ring and engages part of the periphery of the gear ring to counteract the hydraulic forces thereon. Said depression area communicates with a depression area of smaller size between said resilient ring and the housing wall, the latter depression area being defined by resilient sealing means and communicates with the low pressure connection of the machine.

3,759,640

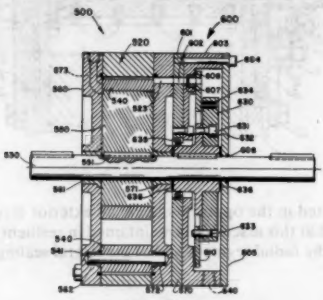
ROTARY ENGINE VALVE MEANS

John N. Hinckley, Beloit, and Van Tassel Stonehocker, Brookfield, both of Wis., assignors to Beloit College, Beloit, Wis.

Filed Apr. 1, 1971, Ser. No. 130,182
Int. Cl. F01c *1/00*; F03c *3/00*
U.S. Cl. 418—249 **7 Claims**

This invention provides a valve system for directing charges of pressurized working fluid into the expandable chambers of a rotary engine, for operation against a pivoted power arm as-

sociated with each chamber. The valve system includes a manifold for containing a supply of pressurized working fluid, and fluid intake ports associated with each expandable engine chamber. Fluid conduit means associated with each intake port communicate with the manifold, and valve means associated with each port are adapted to open or close the con-



duit means in a timed sequence. Cut-off means also are provided to stop the flow of working fluid to the engine chambers after the power arm associated with each port has moved through a selected portion of its power stroke. Switching means also may be included to selectively switch the rotary engine between simple and compound modes of operation.

3,759,641

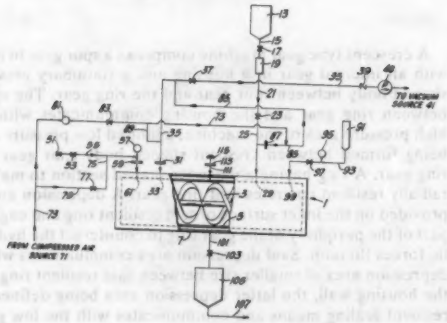
PROCESS AND APPARATUS FOR PRE-EXPANDING POLYMER PARTICLES

Richard H. Immel, Sewicky, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.

Division of Ser. No. 765,342, Oct. 7, 1968, Pat. No. 3,577,360. This application Jan. 12, 1971, Ser. No. 105,981

Int. Cl. F27b *3/22*

U.S. Cl. 425—4 **3 Claims**



An apparatus and process are provided for expanding polymeric particles to a predetermined density, which particles are subject to further expansion. Agitated particulate expandable polymer is heated in a dry atmosphere in a closed vessel, under vacuum, to a predetermined density. To achieve ultra-low density expandable prepuff, a coolant such as water is introduced into the closed vessel after the predetermined density is reached, but prior to the release of the vacuum. Following release of the vacuum, the beads are removed from the closed vessel and may be molded directly, without any aging period such as that necessary following steam pre-expansion.

3,759,642

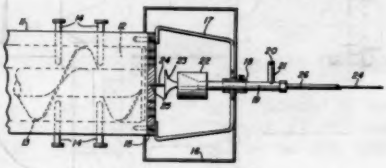
EXTRUSION CUTTING DEVICE

Charles S. Poteet, III, Cockeysville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,167

Int. Cl. B26f *3/00*; B29c *17/14*

U.S. Cl. 425—72 **10 Claims**



The device of this invention cuts multiple extrudates to a constant length while at the same time preventing any bending and resulting weakening of the extrudates. These extrusions are cut by a gaseous pressure source by directing this gaseous pressure in the area of the extruder die face. When the extrusion is of a preprogrammed length, the gaseous force on the extrudate will be sufficient to shear the material at the die face. An essentially opposing gaseous pressure force may be used in conjunction with the basic gaseous shearing structure. Inorganic extrudates are very effectively sheared using this device

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3,759,643

APPARATUS FOR APPLYING LABELS ONTO HOLLOW BODIES

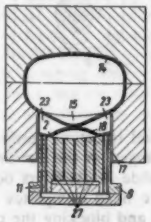
Erhard Langecker, Hohbuschener Weg 5, Meinerzhagen/Westphalia, Germany

Division of Ser. No. 41,194, May 28, 1970, Pat. No. 3,657,415. This application Feb. 17, 1972, Ser. No. 227,111

Claims priority, application Germany, Aug. 22, 1968, P 17 86 133.5; June 5, 1969, P 19 28 596.2

Int. Cl. B29c *27/14*; B29d *9/00*

U.S. Cl. 425—109 **6 Claims**



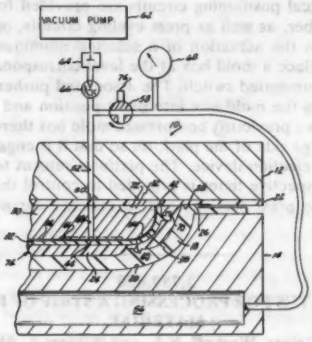
Apparatus for applying labels onto hollow bodies, including a blow mold having a cavity for containing a hollow body, and a member movable toward and away from the mold cavity, the member having an end conforming to the curvature of the cavity and forming a section thereof for carrying a label to be applied to the hollow body during movement of the member toward the cavity. Ventilation openings are provided in the mold for venting any air which may be present between the hollow body and the label during application. Suction openings are provided in the member for securely maintaining the label in place on the member, and pressure openings are also provided in the central portion member to cause the label to bow outwardly, thereby presenting a convex surface to the hollow body.

3,759,644

MOLD FOR FORMING PLASTIC FOAM PARTS

Michael Ladney, Jr., 18125 E. Ten Mile Rd., East Detroit, Mich.

Filed Dec. 29, 1971, Ser. No. 213,298
Int. Cl. B29f 1/10
U.S. Cl. 425—129 7 Claims



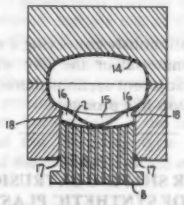
A mold for forming plastic foam parts which has an improved arrangement for retaining within the molding cavity an insert onto which foam plastic is molded. A vacuum source communicates with the molding chamber through an inlet in the chamber wall. An insert is positioned over the vacuum inlet so that a continuous peripheral edge of the insert is sealingly interengaged on the wall, to thereby enseal vacuum between the insert and the chamber wall onto which the insert is positioned. The greater pressure outside of the ensealed vacuum acts on the insert to maintain the sealing interengagement of the insert edge with the chamber wall to thereby hold the insert in fixed position within the molding chamber.

3,759,645

APPARATUS FOR APPLYING LABELS ONTO HOLLOW BODIES

Erhard Langecker, Hohbuschner Weg, Meinezhagen, Germany

Division of Ser. No. 767,719, Oct. 15, 1968, Pat. No. 3,608,020. This application Apr. 8, 1971, Ser. No. 132,574
Int. Cl. B29d 23/03
U.S. Cl. 425—109 2 Claims



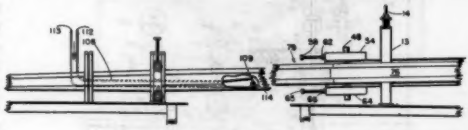
Apparatus for applying labels onto hollow bodies including a blow mold having a cavity for containing a hollow body, and a member movable toward and away from the mold cavity, the member having an end conforming to the curvature of the cavity and forming a section thereof for carrying a label to be applied to the hollow body during movement of the member toward the cavity. Ventilation openings are provided in the mold for venting any air which may be present between the hollow body and the label during application, and suction openings are provided in the member for securely maintaining the label in place on the member.

3,759,646

MACHINE FOR PRODUCING SANDWICHED PLASTIC FOAM SHEET METAL PANELS

Daniel Massagli, Covina, and Marino Ralph Massagli, Claremont, both of Calif., assignors to True-Lok Metal Fabricating Company, Inc., Los Angeles, Calif.

Division of Ser. No. 955, Jan. 6, 1970, Pat. No. 3,643,306. This application Nov. 8, 1971, Ser. No. 196,600
Int. Cl. B29c 27/14
U.S. Cl. 425—110 11 Claims



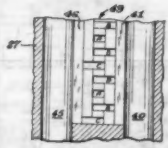
A machine and process to continuously produce sandwiched sheet metal-rigid plastic foam panels provided with a metal forming unit, an injector for the plastic reactants, and an expansion confining apparatus, the foam forming reactants being introduced into that portion of the metal panel that is ahead of the location where the metal panel enters the expansion confining apparatus to allow the foam formed to start expanding prior to entry of the panel into the expansion confining apparatus, the expansion confining apparatus being provided with a cavity conforming to the cross sectional outline of the panel, that portion of the panel remaining in the cavity until full expansion has taken place before it is discharged from the confining apparatus.

3,759,647

APPARATUS FOR THE PREPARATION OF MULTILAYER PLASTIC ARTICLES

Walter J. Schrenk, Bay City; Douglas S. Chisholm; Kenneth J. Cleereman, and Turner Alfrey, Jr., all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 88,385, Nov. 10, 1970, abandoned, which is a division of Ser. No. 835,839, April 10, 1969, Pat. No. 3,565,985, which is a division of Ser. No. 445,851, March 29, 1965, abandoned, which is a continuation-in-part of Ser. No. 431,336, Feb. 9, 1965, abandoned. This application Mar. 15, 1972, Ser. No. 234,978
Int. Cl. B29d 9/00
U.S. Cl. 425—131 8 Claims



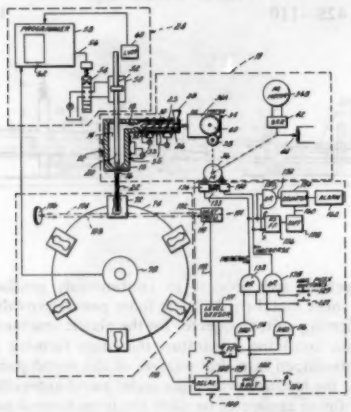
Multiple layer films are made by arranging a minimum of two streams into one stream having a plurality of generally parallel layers. By mechanically manipulating the layered stream, an increased number of layers are obtained and the manipulating stream is shaped into a desired configuration having a plurality of layers generally adjacent to a major surface thereof. Under certain conditions, iridescent products are obtained without the use of pigment.

3,759,648

EXTRUDER CONTROL SYSTEM

Denes B. Hunkar, Cincinnati, Ohio, assignor to Hunker Instrument Development Laboratories, Inc., Cincinnati, Ohio

Filed Sept. 15, 1971, Ser. No. 180,548
Int. Cl. B29d *23/03*
U.S. Cl. 425—140 **8 Claims**



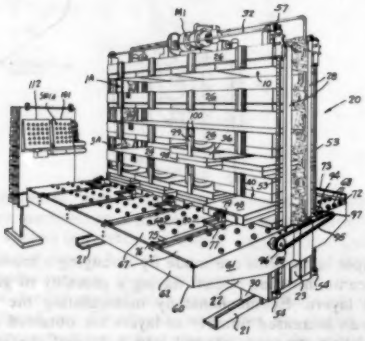
An extruder control system for providing extruded products of equal lengths particularly for parison extruders in blow molding machines. A continuous feed extruder, when used with a plural mold apparatus, must extrude at a precise rate to provide a proper length parison to each mold. The control system measures errors in the length of the product delivered to each mold and makes a compensating adjustment in the extrusion rate of the extruder. The extrusion rate and product length are dependent on material viscosity which is varied by changing the rotational speed of the plasticizing screw. The control system compensates for material viscosity fluctuations and allows the extruder speed to follow that of the mold apparatus.

3,759,649

MULTIPLE-SECTION MOLDING PRESS

Claude T. Tyler, Warsaw, Ind., assignor to Tyler Machinery Co., Inc., Warsaw, Ind.

Filed Feb. 4, 1972, Ser. No. 223,506
Int. Cl. B30b *7/02, 15/16*; B29g *7/02*
U.S. Cl. 425—145 **26 Claims**



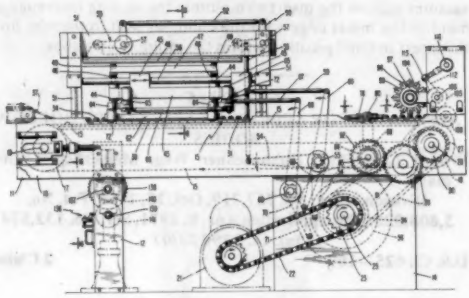
A multiple-section molding press having molding press sections arranged in aligned vertical and horizontal rows. Each section has a fluid pressure-operated platen. A vertically movable horizontal elevator platform member is adapted to receive box molds from a conveyor, and the box molds can be moved along the platform member so as to be manually positioned adjacent any of the vertical rows of press sections. A bank of illuminated control switches is provided for the sections. The elevator platform is provided with pushers and ejection devices aligned with the respective vertical rows. Automatic vertical positioning circuits are provided for the platform member, as well as press cycling circuits, operating in response to the actuation of a selected illuminated control switch to place a mold box at the level corresponding to the selected illuminated switch. The associated pusher automatically moves the mold box into press position and simultaneously ejects a previously compressed mold box therefrom onto the discharge side of the platform so that it is engaged by the associated ejection device. The platform returns to conveyor level. A respective timer is provided to control the action of each of the press sections and to indicate completion of a press cycle.

3,759,650

APPARATUS FOR PROCESSING A STRIP OF PLIABLE MATERIAL

Arthur J. Griner, Wyckoff, N.J., and William A. Blain, Spring Valley, N.Y., assignors to Nabisco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 65,727, Aug. 20, 1970, Pat. No. 3,653,335, which is a continuation of Ser. No. 754,415, Aug. 21, 1968, abandoned. This application Apr. 7, 1971, Ser. No. 132,124
Int. Cl. A22 *11/10*
U.S. Cl. 425—302 **27 Claims**



Apparatus for continuously conveying a ribbon-like strip of pliable dough-like material or the like while automatically repetitively shaping adjacent sections thereof and severing the same into shaped scoop-like products.

3,759,651

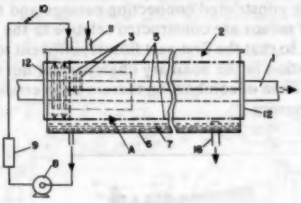
APPARATUS FOR SHAPING EXTRUSION-MOULDED ARTICLES MADE OF SYNTHETIC PLASTICS MATERIAL

Siegfried Beyer, Saalburgstrasse 22, 6 Nider Eschbach, Germany

Division of Ser. No. 28,633, April 15, 1970, abandoned. This application Dec. 17, 1971, Ser. No. 209,106
Int. Cl. B29d *23/04*; B29f *3/00*
U.S. Cl. 425—343 **8 Claims**

Method for shaping extrusion-moulded articles made of synthetic plastics material, whrein the shaping is carried out with simultaneous cooling, characterised in that a sprayed-on cooling liquid and a gaseous medium are simultaneously caused to act upon the articles, and in that, in this process the gaseous medium is under low pressure.

The apparatus for carrying-out the above-mentioned method comprises a cooling-chamber and several shaping discs or plates which are arranged in the cooling-chamber spaced apart from one another and one behind the other and whose apertures are adapted to correspond to the desired



dimensions of the extrusion-moulded articles, whereas between the shaping discs or plates and the inner wall of the cooling-chamber, a free space is left remaining, in which spraying devices are arranged, for the cooling liquid; and for the gaseous medium the suction tube or nozzle of a low pressure source is connected to the wall of the cooling-chamber.

3,759,652

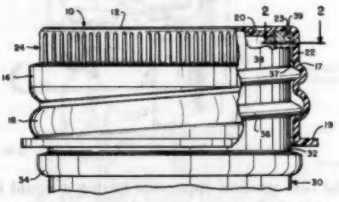
MOLDING APPARATUS FOR MAKING THERMOFORMED ARTICLES

Edmund Childs, Long Meadow, Mass., and Raymond Ostrowski, Florence, S.C., assignors to The KLM Company, Stratford, Conn.

Division of Ser. No. 826,973, May 22, 1969, Pat. No. 3,606,063. This application Apr. 5, 1971, Ser. No. 131,480

Int. Cl. B29c *17/04*

U.S. Cl. 425—388 **6 Claims**



A thermoformed screw type closure of semi-rigid material having a plurality of projections located between the uppermost point of the thread and the top of the closure which is recessed to lie inwardly of the root of the thread to engage the neck of a container onto which the closure is to be applied. The projections deform upon screwing down of the closure onto the container producing a good seal and fit and preventing the closure from backing off. A die is also disclosed for making closures of the foregoing type which utilizes the recessed portions of the closure as an aid in removing the closure from the die.

3,759,653

EXTRUSION DIE WITH ARCHED CHOKE BAR

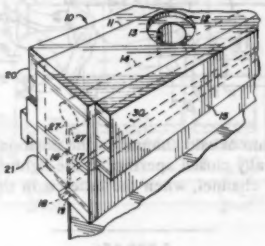
Anthony J. Schreiber, Philadelphia, Pa., assignor to Standard Oil Company, Chicago, Ill.

Filed June 30, 1971, Ser. No. 158,405

Int. Cl. B29f *3/04*

U.S. Cl. 425—461 **3 Claims**

A film extrusion die comprising: a body having (1) means defining an inlet recess; (2) a longitudinally extending passageway communicating with said recess; (3) an extrusion manifold in flow communication with said inlet passageway extending substantially the entire width of the die; and (4) opposed wall portions in flow communication with said manifold which form an extrusion passageway leading from said manifold, one of said opposed wall portions being provided with a transversely disposed channel, and (5) a transversely disposed arched metering bar received in said channel, said bar including an extending portion which projects into said ex-



trusion passageway leading from said manifold; a set of lips forming an elongated extrusion orifice extending substantially the entire width of the die with said set of lips attached to said body in flow communication with said extrusion passageway; and two die endplates, one attached to each end of said body respectively encapsulating each end of said manifold, extrusion passageway and lips.

3,759,654

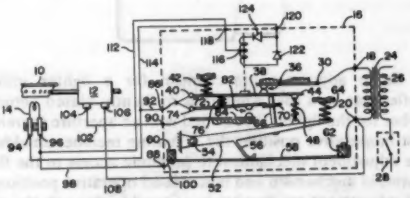
THERMAL OPERATOR FOR IGNITION PROVING SYSTEM

Joseph Clifford, Corona, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 12, 1971, Ser. No. 198,142

Int. Cl. F23n *5/00*

U.S. Cl. 431—66 **5 Claims**



An improved operator is disclosed which greatly amplifies the relatively small expansion and contraction movements of a heat expansible wire connected in series with an electric igniter having a positive coefficient of resistance. As the igniter changes temperature its electrical resistance also changes causing a difference in current flow through the wire and accordingly an expansion or contraction thereof. Lever means attached to the wire amplify this movement and utilize it to selectively actuate switches controlling energization of both the electric igniter and an electrically actuated fuel valve providing fuel to a burner.

3,759,655

GAS OUTLET CONTROL DEVICE FOR A GAS LIGHTER

Jean Gaston Malamoud, Annecy, France, assignor to S. T. Dupont, Paris, France

Filed Sept. 15, 1971, Ser. No. 180,759

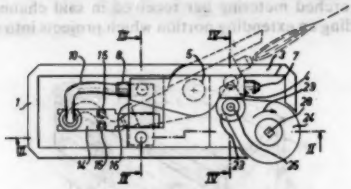
Claims priority, application France, Sept. 15, 1970, 7033322

Int. Cl. F23q *25/00*

U.S. Cl. 431—150 **7 Claims**

A gas lighter comprising a flue or gas escape channel for carrying to the outside of the lighter the gas liberated by a gas

outlet control device. At least the downstream portion of the gas escape channel is mounted so that it can be oscillated between two end positions, one for operation of the lighter and the other for resting position thereof. The motion of the

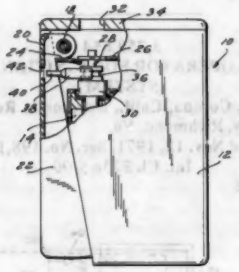


movable portion of said channel to the position for operation opens a normally closed aperture in the lighter, opposite the outlet of said channel, when the latter is in the position for operation.

3,759,656
LIGHTER

Peter Steer Sampson, Wimbledon, London SW 19, England, assignor to Ronson Corporation, Woodbridge, N.J.

Filed Sept. 6, 1972, Ser. No. 286,735
Int. Cl. F23q 2/00
U.S. Cl. 431—142 **6 Claims**

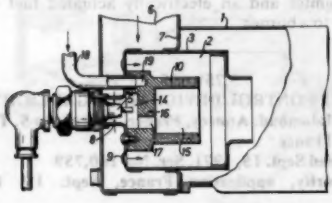


A flame adjustment mechanism for a lighter utilizing liquefied gas as a fuel wherein a resiliently biased actuating member for the lighter is provided with an aperture therein. In a first inoperative position the actuating member shields the flame adjustment mechanism to preclude access to the flame adjustment mechanism and in a second operative position the flame adjustment mechanism is accessible through the aperture.

3,759,657
ATOMIZATION BURNERS

Hilding Ake Gerry Carlsson, Enkoping, Sweden, assignor to Aktiebolaget Bahco Ventilation, Enkoping, Sweden

Filed June 25, 1971, Ser. No. 156,622
Int. Cl. F23d 21/00
U.S. Cl. 431—170 **5 Claims**

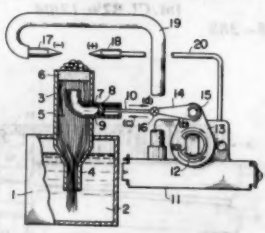


A burner of the type having a combustion chamber, a porous, fuel atomizing member, combustion chamber fuel supply means, electric fuel igniting means, and with which the atomizing member has an auxiliary chamber and a main chamber, which are interconnected by a constricted connecting passage. Means are also provided for applying a first part flow of combustion air to the combustion chamber via the passage and means for supplying a second part flow of combustion air to said chamber. The improvement resides in the fact that the constricted connecting passage and the first part flow supply means are constructed relative to the second part flow means so that the first part flow is sufficient to sustain initial combustion in the auxiliary chamber but not sufficient to sustain any form of combustion therein upon continued operation of the burner.

3,759,658
LIQUID FUEL IGNITION APPARATUS

Hideo Mifune, Hirakata; Akira Ishii; Masanori Yokoyama, both of Kita-Kawachi-gun, and Toshihiro Yamazoe, Nada-ku, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 24, 1971, Ser. No. 146,417
Claims priority, application Japan, May 27, 1970, 45/45935; May 27, 1970, 45/45936; May 27, 1970, 45/45937; May 27, 1970, 45/45938; May 29, 1970, 45/45934; May 29, 1970, 45/46735; May 29, 1970, 45/46736; May 29, 1970, 45/46737
Int. Cl. F23q 3/00
U.S. Cl. 431—255 **6 Claims**



A liquid fuel ignition apparatus having a liquid fuel reservoir, means including a wick, an air pump and a porous filter for turning a portion of liquid fuel into bubbles, and a high voltage generator for applying a high voltage across a pair of discharge electrodes disposed in close proximity to the bubbling portion of the liquid fuel so as to ignite the liquid fuel bubbles by spark discharge occurring across the discharge electrodes.

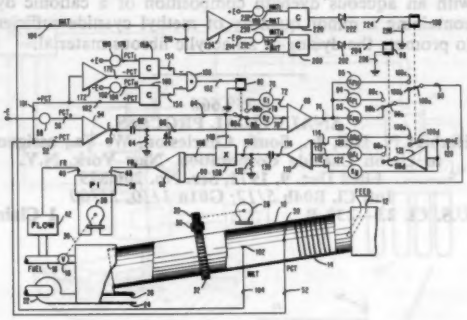
3,759,659
METHOD AND APPARATUS FOR CEMENT KILN CONTROL

Theodosios Bay, Lansdale, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed June 8, 1972, Ser. No. 260,923
Int. Cl. F27b 7/00
U.S. Cl. 432—24 **8 Claims**

A control system for controlling the firing rate in a rotary cement kiln so as to maintain the temperature just ahead of the chain section at a predetermined set point. The control system includes both proportional and integral control and is adaptive in that the reset rate of the controller is increased when the temperature deviation exceeds a predetermined amount. In addition the overall gain of the control system is modified so that the gain is changed to a lower value when a

temperature measurement in the mid-kiln region exceeds a certain high value with the gain being changed to a higher value when that mid-kiln temperature is below a predetermined minimum value. Means are provided to compensate for the discontinuity in the proportional control action when the mid-kiln temperature causes a change in the controller gain.

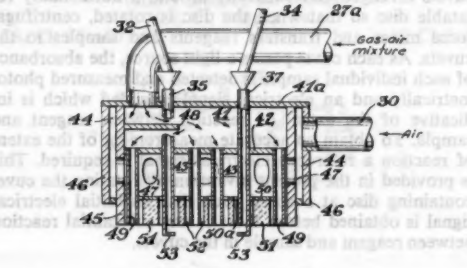


3,759,660

LOW VELOCITY BURNER FOR THERMAL EXPANSION OF PARTICULATE SOLIDS

Charles K. Bon, and David R. Johnson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 18, 1971, Ser. No. 190,068
Int. Cl. F27b *11/00*
U.S. Cl. 432—58 **4 Claims**



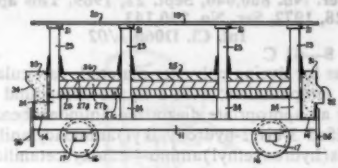
The burner of this invention is particularly adapted for use with a furnace for thermally expanding a particulate solid, such as clay particles. The burner pot, which comprises basically an upper compartment, lower compartment and a surrounding peripheral compartment, is mounted at the top of the furnace chamber. A mixture of natural gas and air, as a fuel mixture, is directed into the upper compartment from a mixer in communication with the upper compartment. Simultaneously, an auxiliary air supply is directed into the peripheral compartment and on into the lower compartment through several ports which open into the lower compartment. The clay particles to be expanded are fed downwardly through the burner pot and into the furnace through vertical feed nozzles in the burner pot. The fuel mixture is directed into the top of the furnace chamber through flame nozzles in the burner pot which surround the feed nozzles. At the tip of the flame nozzles, which is the underside of the burner pot, the fuel mixture and auxiliary air converge to provide the flame front for expanding the clay particles.

3,759,661

KILN CARS

Noel Barsby, Penn, Wolverhampton, Stafford, England, assignor to Gibbons Brothers Limited, Brierley Hill, Stafford, England

Filed Jan. 20, 1972, Ser. No. 219,303
Claims priority, application Great Britain, Jan. 28, 1971, 3,412/71
Int. Cl. F27b *9/26*
U.S. Cl. 432—241 **14 Claims**



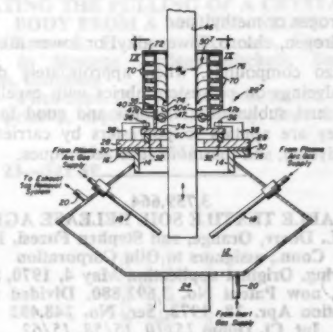
A low thermal mass kiln car having a wheeled base on which is superposed a thermal barrier means composed of layers of light-weight non-load-bearing thermally insulating material, and a plurality of posts supported from the base of the kiln car and projecting upwardly through the thermal barrier means, the posts being supported with lateral stability by sockets on the base and carrying an upper deck for supporting the ware.

3,759,662

SEAL

Thomas G. Bengel, Plum Borough, and Thomas E. Nicely, Franklin Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pitsburgh, Pa.

Filed Nov. 9, 1970, Ser. No. 88,029
Int. Cl. F27b *9/28*; F26b *25/00*
U.S. Cl. 432—242 **11 Claims**



A seal for a chamber having an opening therein and adapted to hold a fluid having a fluid pressure differential with respect to atmospheric pressure is disclosed. The seal surrounds the opening. A workpiece is movable relative to the opening and defines with the seal a controlled gap of limited width as the workpiece moves relative to the opening in the work chamber. The controlled gap is operable to retard the differential flow of the fluid through the controlled gap, to create turbulence in the fluid in the controlled gap, and to build up a back pressure of the fluid in the work chamber so that the differential flow of the fluid through the controlled gap is substantially minimized and the fluid pressure within the work chamber remains substantially constant during the movement of the workpiece relative to the opening.

CHEMICAL

3,759,663
PROCESS FOR DYEING POLYESTER FABRICS WITH DISAZO DYESTUFFS

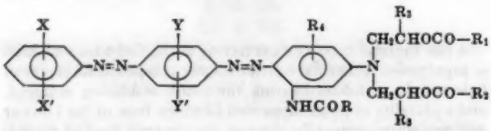
Edgar E. Renfrew and Dominic A. Zanella, Lock Haven, Pa., assignors to American Aniline Products, Inc., Lock Haven, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 860,040, Sept. 22, 1969. This application Feb. 28, 1972, Ser. No. 230,143

Int. Cl. D06p *1/02*

U.S. Cl. 8—41 C **4 Claims**

Process for dyeing polyester material, particularly polyethylene terephthalate, with a disazo compound made by coupling an appropriate diazotized aminoazobenzene into an esterified 3-bis(2-hydroxyalkyl)aminoacylanilide, such as 3-bis(hydroxyethyl)amino-4-ethoxyacetanilide. The diazo compounds have the formula



wherein

each of X and X′ is independently hydrogen, nitro, chloro, cyano, trifluoromethyl, lower alkoxy, sulfamyl, lower alkyl sulfamyl, di(lower alkyl) sulfamyl, lower alkyl sulfonyl, carbamyl, n-lower alkyl carbamyl, or N,N-di (lower alkyl)carbamyl;

each of Y and Y′ is independently hydrogen, chloro, lower alkyl, lower alkoxy or —NHCO-(lower alkyl);

R is lower alkyl, phenyl or tolyl;

R_1 is phenyl, lower alkylphenyl, lower alkoxyphenyl, chlorophenyl or bromophenyl;

R_2 is phenyl, lower alkylphenyl, lower alkoxyphenyl, chlorophenyl, bromophenyl, lower alkyl or chloro-lower alkyl;

R_3 is hydrogen or methyl; and

R_4 is hydrogen, chloro, lower alkyl or lower alkoxy.

The disazo compounds, when appropriately dispersed, produce dyeings on polyester fabrics with excellent substantivity and sublimation fastness and good fastness to light. They are applied to polyesters by carrier dyeing, pressure dyeing, and thermofixation techniques.

3,759,664
DURABLE TEXTILE SOIL RELEASE AGENT

Richard L. Doerr, Orange, and Stephen Fuzesi, Hamden, Conn., assignors to Olin Corporation

No Drawing. Original application May 4, 1970, Ser. No. 34,606, now Patent No. 3,692,880. Divided and this application Apr. 28, 1972, Ser. No. 248,492

Int. Cl. D06m *15/10, 15/58, 15/62*

U.S. Cl. 8—115.6 **5 Claims**

A novel phosphated polyol is provided which is used in conjunction with aminoplast resins to provide improved soil release properties to cellulosic fibers and blends of cellulosic fibers with polyester fibers having durable press or wash and wear characteristics.

3,759,665
INCREASING THE CATIONIC DYEABILITY OF ACRYLIC SHAPED ARTICLES

Alex S. Forschirm, Hiawatha, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,366

Int. Cl. D06p *1/86, 3/76*

U.S. Cl. 8—172 **8 Claims**

An improved dyebath composition and an improved process for dyeing an acrylic shaped article (e.g., fiber or film) are disclosed. The shaped article is contacted with an aqueous dyebath composition of a cationic dye containing a minor quantity of methyl cyanide sufficient to promote the dyeing of an acrylic fibrous material.

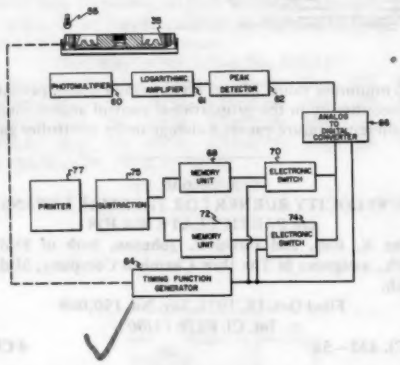
3,759,666
ANALYTICAL PROCESS

Herbert N. Hill, Jr., South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,379

Int. Cl. B04b *5/12;* **G01n** *1/10, 21/00*

U.S. Cl. 23—230 B **1 Claim**



Known rotating spectrophotometers have a series of cuvets arranged concentrically around a horizontally rotatable disc so that when the disc is rotated, centrifugal force mixes and transfers reagents and samples to the cuvets. As each cuvet passes a light source, the absorbance of each individual sample is detected and measured photometrically and an electrical signal provided which is indicative of the extent of reaction between reagent and sample. To obtain an accurate measurement of the extent of reaction a reference electrical signal is required. This is provided in the present invention by rotating the cuvet containing disc at a speed such that an initial electrical signal is obtained before there is any substantial reaction between reagent and sample in the cuvets.

3,759,667
APPARATUS FOR ASPIRATING PRECISE VOLUMES OF FLUID SAMPLE

John D. Bannister, Dover, Mass., Frederick L. Coller, Ann Arbor, Mich., and Italo J. De Santis, Medway, Mass., assignors to Damon Corporation, Needham Heights, Mass.

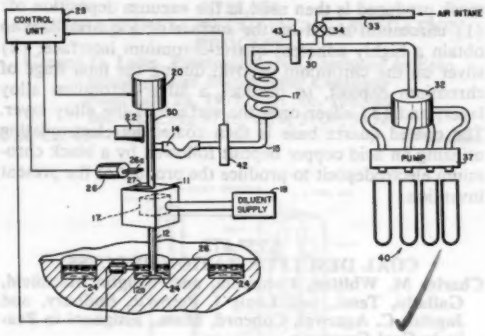
Filed Oct. 22, 1971, Ser. No. 191,722

Int. Cl. G01n *1/14, 1/16*

U.S. Cl. 23—259 **9 Claims**

Apparatus for aspirating a predetermined volume of liquid sample from a container into an intake conduit, together with a quantity of diluent having predetermined volumetric ratio to the sample volume. A vertically reciprocable sampling probe is programmed to aspirate sample until the leading edge of the sample reaches a sensor in the conduit defining the precise volume. The sampler is then reciprocated into a diluent chamber and aspirates diluent for a preset time. Thereafter the sampler moves into air and aspirates an air volume equal to the sample volume. The probe is then reinserted in the diluent, again

for the preset time and thereafter again aspirates the precise volume of air. In the final step the sampler is again inserted into the diluent chamber to aspirate diluent until the leading edge of the sample reaches a second sensor positioned to define a volume between it and the sampler



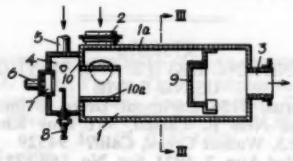
orifice, such that the diluent aspirated has a known ratio to the precise volume of sample. A downstream air intake is actuated each time the sampler is moved into air to insert sufficient air ahead of the fluid column to prevent undue acceleration of the fluids in the conduit.

3,759,668

AFTER-BURNER FOR RE-COMBUSTION OF EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Mitsumasa Yamada and Hiroshi Sawada, Shizuoka, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 14, 1971, Ser. No. 189,172
Claims priority, application Japan, June 15, 1971 (utility model), 46/50,905
Int. Cl. F01n *3/14*
U.S. Cl. 23—277 C **10 Claims**



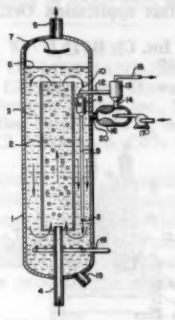
An after-burner for re-combustion of unburnt components of exhaust gases of an internal combustion engine, comprising: a burner including a mouth for producing and spouting from said mouth a jet flame swirling about a longitudinal center line of said jet flame; a chamber associated with the burner for receiving said jet flame, a longitudinal center line of said chamber being parallel to said jet flame longitudinal center line, the chamber having an end opposite to the burner; means mounted in the chamber for introducing the exhaust gases into the chamber and inducing the exhaust gases to rotate round the jet flame; a device mounted in the chamber and confronting the mouth for dispersing the jet flame radially with respect to the chamber and thereby mixing the jet flame with the rotating exhaust gases to make a mixture thereof; and an outlet pipe mounted on the opposite end. The unburnt components are burnt within the chamber to clear the exhaust gases of the unburnt components and then the cleared exhaust gases are discharged from the chamber through the outlet pipe.

3,759,669

APPARATUS FOR CONTACTING LIQUID AND SOLID PARTICLES

Stuart W. Aaron and Johannes W. F. M. Lemmers, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,967
Claims priority, application Netherlands, Nov. 24, 1969, 6917651
Int. Cl. B01j *9/08*; C10g *23/06*
U.S. Cl. 23—288 E **2 Claims**



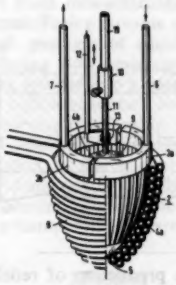
An apparatus and a process wherein a solid-liquid slurry is circulated in a vertical reactor by means of gas lift action in a centrally located tube inside the reactor. One or more hydrocyclones are used to clarify liquid product leaving the reactor and to return slurry solids to the reactor. The process is particularly desirable for catalytically desulfuizing residual oils in the presence of hydrogen.

3,759,670

INITIATING THE PULLING OF A CRYSTALLINE BODY FROM A MOLTEN STOCK

Theodor Rummel, Hannover-Kirchrode, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 18, 1970, Ser. No. 73,304
Claims priority, application Germany, Sept. 24, 1969, P 19 48 194.8
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 SP **5 Claims**



A method and apparatus for pulling a crystalline body by a seed crystal fastened in a holder from a melting stock heated, in a cold coil crucible, at least to melting temperature. The method comprises heating the holder and one end of the seed crystal, moving the preheated

zone to the other end of the seed crystal, approaching the heated end to the stock to be molten, whereby the latter is heated to a temperature at which it is conductive, and thereafter, heating the stock by the field issuing from the cold coil crucible.

3,759,671

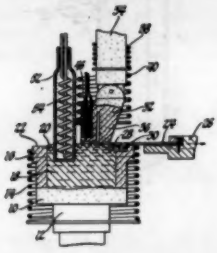
HORIZONTAL GROWTH OF CRYSTAL RIBBONS

Carl E. Bleil, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Original application Jan. 31, 1969, Ser. No. 795,561. Divided and this application Oct. 15, 1971, Ser. No. 189,699

Int. Cl. B01j *17/18*

U.S. Cl. 23—301 SP **5 Claims**



A method and apparatus is described for horizontally pulling crystal ribbons from a melt parallel to the melt surface. The heat of crystallization is selectively removed from one end of a seed crystal by a heat absorbing means perpendicular to the melt surface. Means are provided to appropriately suppress net loss of the heat of fusion from the balance of the seed in contact with the melt to control the thickness of the resultant ribbon.

3,759,672

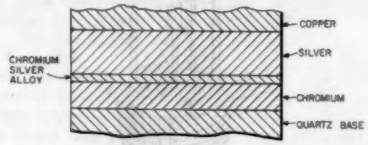
STAR TRACKING RETICLES

Wade O. Smith, Bowie, and Albert R. Toft, Edgewater, Md., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Original application Oct. 12, 1970, Ser. No. 80,029, now Patent No. 3,702,808, dated Nov. 14, 1972. Divided and this application Apr. 17, 1972, Ser. No. 244,440

Int. Cl. B32b *15/04*

U.S. Cl. 29—195 Y **6 Claims**



A method for the production of reticles, particularly those for use in outer space, wherein the product is a quartz base coated with highly adherent layers of chromium, chromium-silver, and silver vacuum deposited through a mask, and then coated with an electrodeposit of copper from a copper sulfate solution followed by an electrodeposit of black chromium. The masks are produced by coating a beryllium-copper alloy substrate with a positive working photoresist, developing the photoresist according to a pattern to leave a positive mask, plating uncoated areas with gold, removing the photoresist, coating the substrate with a negative working photoresist, developing the negative working photoresist to expose the base metal of the pattern, and chemically etching the unplated side of the pattern to produce the mask. The mask produced is then used in the vacuum deposition of: (1) chromium metal on the surface of a quartz base to obtain a highly adherent quartz-chromium interface; (2) silver on the chromium deposit, during the final stage of chromium deposit, to produce a silver-chromium alloy layer; and (3) silver onto the surface of the alloy layer. The coated quartz base is then coated by electroplating utilizing an acid copper deposit followed by a black chromium electrodeposit to produce the product of the present invention.

3,759,673

COAL DESULFURIZATION PROCESS

Charles M. Whitten, Columbia, and Vaughn Mansfield, Gallatin, Tenn., and Louis J. Petrovic, Sudbury, and Jagdish C. Agarwal, Concord, Mass., assignors to Peabody Coal Company

Filed Nov. 5, 1971, Ser. No. 196,098

Int. Cl. C10l *9/02, 9/08*

U.S. Cl. 44—1 R **6 Claims**

Coal is treated in a reducing atmosphere in a fluid bed reactor to partially devolatilize it, remove all moisture, and remove some H_2S and SO_2. The then charred coal is treated in a multi-stage contactor with hot gas composed of hydrogen and methane to remove most of the remaining sulfur.

3,759,674

GELLED ALCOHOLS

Stanley J. Gregg, North Plainfield, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,898

Int. Cl. C10l *7/04*

U.S. Cl. 44—7 C **9 Claims**

Dispersions of certain ethylene-acrylic acid copolymers and amine emulsifiers in water form stable gels when admixed with alcohols.

3,759,675

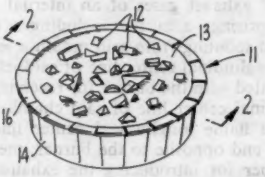
FIRE-KINDLING DEVICE AND METHOD OF USING SAME

Milton Lazarus, 2156 Carlmont Drive, Belmont, Calif. 94002, and Nels B. Larsen, 401 Pine Knoll Drive, Mannor #3, Walnut Creek, Calif. 94529

Filed Aug. 2, 1971, Ser. No. 168,171

Int. Cl. C10l *11/00*

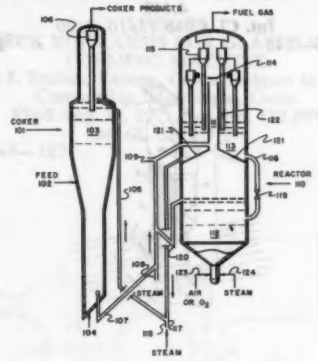
U.S. Cl. 44—38 **10 Claims**



A fire-kindling device comprising an open-top waxed paper container filled with particles of plastic material embedded in a wax binder, with the lip of the container serving as wick means for easy ignition of the wax. A method is also provided in which a fire is kindled by assembling the fuel to be ignited in juxtaposition to a starter composition containing wax and a plastic material such

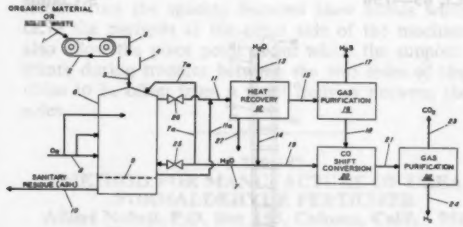
as polymethylmethacrylate, and igniting the wax, whereby the wax will burn and cause ignition of the plastic material which will burn hotter and ignite the fuel with a minimum of smoke and odor.

3,759,676
INTEGRATED FLUID COKING/GASIFICATION PROCESS
Gerard C. Lahn, Parsippany, N.J., assignor to Esso Research and Engineering Company
Filed Jan. 22, 1971, Ser. No. 108,709
Int. Cl. C10g *9/28;* C10j *3/00, 3/20*
U.S. Cl. 48—206 7 Claims



A heavy carbonaceous material such as petroleum residuum is converted to distillate and gaseous products by an integrated process consisting of coking said heavy carbonaceous material in a conventional fluid coking reactor, and gasifying the coke produced in an improved three zone gasifying reactor.

3,759,677
CATALYTIC SYNTHESIS GAS MANUFACTURE
Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed May 5, 1970, Ser. No. 34,834
Int. Cl. C10j *3/00*
U.S. Cl. 48—209 13 Claims



A process for producing synthesis gas which comprises contacting an organic feed material, containing hydrogen and at least 10 weight percent oxygen and containing less than five weight percent sulfur, with steam in the presence of an alkali metal carbonate catalyst at an elevated temperature. Preferably the feed material is solid waste material, most preferably solid municipal waste.

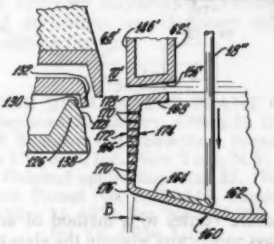
3,759,678
REFORMER CATALYST
Bertrand L. Chamberland, Storrs, Conn., and Eric J. Hoag, Charleston, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 8, 1971, Ser. No. 132,608
Int. Cl. C01b *2/14*
U.S. Cl. 48—214 1 Claim

Nickel catalysts, often supported on alumina, are used in primary and secondary reformers for the steam reforming of hydrocarbons. If such catalysts contain less than 30 p.p.m. maximum sodium or potassium or both, the problem of the fouling of waste heat boilers is alleviated.

3,759,679
PRODUCTION OF METHANE-RICH FUEL GAS
William F. Franz, Gardiner, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed July 23, 1971, Ser. No. 165,713
Int. Cl. C01b *2/16;* C07c *9/04*
U.S. Cl. 48—213 9 Claims

A liquid hydrocarbon fuel is reacted with hydrogen and H_2O over a nickel oxide-chromium oxide catalyst at high pressure to produce a methane-rich fuel gas. Preferably, hydrogen in the product gas is recovered and totally recycled to the reaction zone. Optionally, CO_2 may be removed from the product gas producing substantially pure methane.

3,759,680
METHOD AND APPARATUS FOR PRODUCING FIBERS FROM GLASS
Dale Kleist, St. Louisville, and Carl S. Buchanan, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation
Filed Sept. 14, 1970, Ser. No. 71,707
Int. Cl. C03b *37/04, 37/06*
U.S. Cl. 65—6 12 Claims

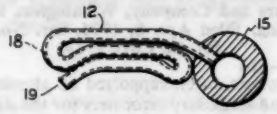


The disclosure embraces a method of and apparatus for producing fibers from heat-softenable materials, particularly glass, by centrifuging streams of heat-softened glass delivered through passages of equal diameters, differing lengths and differing flow resistances in the peripheral wall of a rotating spinner into a gaseous attenuating blast and establishing high temperature and other environmental conditions achieving relationship between glass flow of the streams and heat and attenuating energy at different regions with respect to the spinner wall to control the range of size or diameters of the fibers attenuated by the blast and for producing fibers of substantially uniform diameters within a comparatively narrow size range.

3,759,681
COOLING MEANS FOR FORMING GLASS FIBERS
Stanley K. Russell, Hermitage, Tenn., assignor to Ferro Corporation, Cleveland, Ohio
Filed July 11, 1972, Ser. No. 270,842
Int. Cl. C03b *37/02*
U.S. Cl. 65—12 4 Claims

In an apparatus for the manufacture of glass monofilaments from a feeder of molten glass, a series of open

ended, fluid-conductive fins, with a source of fluid connected thereto, whereby a liquid coolant, preferably water, continuously fed to said fins under pressure, passes



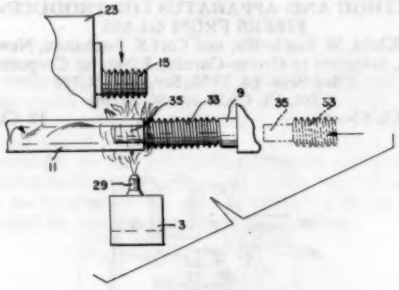
through them and is discharged from said open ends as vapor, due to the heat of the monofilaments being drawn from between said fins, to thereby provide a cooling effect in the area of said monofilaments.

3,759,682

METHOD OF AND SYSTEM FOR THREADING GLASS CONNECTORS AND CONNECTOR

John Wayne Tiley, Hatboro, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 13, 1971, Ser. No. 207,146
Int. Cl. C03b *23/04*
U.S. Cl. 65—109 **3 Claims**



The disclosure relates to a method of and system for threading glass connectors wherein the glass to be threaded is placed in a glass lathe and rotated, a mandrel supporting the end of the glass member to be threaded. The mandrel includes a threaded portion thereon for mating with a threading member which forms the threads on the glass. The threading member forms grooves in the glass between threads having a small radius, the threads also having a small radius, thereby minimizing the tensile strength loss of the glass relative to prior art methods of threading glass.

3,759,683

PROCESS FOR THE MANUFACTURE OF MULTI-COMPONENT SUBSTANCES

Helmut Dislich, Mainz-Gonsenheim, Paul Hinz, Mainz-Mombach, and Reinhard Kaufmann, Mainz, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany

No Drawing. Filed July 30, 1970, Ser. No. 59,669
Claims priority, application Germany, Aug. 13, 1969, P 19 41 191.1
Int. Cl. C03b *5/16*; C03c *13/00*; C03g *3/22*
U.S. Cl. 65—134 **25 Claims**

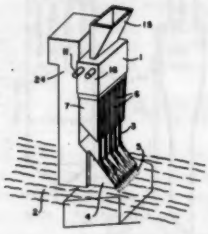
Glassy, crystalline, or glassy crystalline oxidic multi-component substances, which are transparent, are produced without going through a molten phase. An alkali or alkaline earth metal compound and at least one other metal compound, both dissolved in an organic solvent, are reacted in the solvent, the solvent is evaporated to form a precipitate, and the precipitate is heated to form the multi-component substance.

3,759,684

APPARATUS FOR MODIFYING MOLTEN GLASS BY AN ADDITIVE

German Artigas Gimenez, Aviles, Spain, assignor to Saint-Gobain, Neuilly-sur-Seine, France

Original application Feb. 24, 1970, Ser. No. 13,386. Divided and this application Oct. 12, 1971, Ser. No. 188,336
Claims priority, application France, Feb. 21, 1969, 4,440
Int. Cl. C03b *13/10, 3/00*
U.S. Cl. 65—145 **18 Claims**



Apparatus for introducing an additive to a width of glass moving through an enclosure at a temperature at which the glass is molten comprising chamber means within the enclosure, means to supply solid, particulate additive to the chamber means, support means for additive to heat and atmosphere of the enclosure beneath the chamber means and above the glass, and means to combine melt from the support means into a thin ribbon and to put the ribbon into the width of moving glass.

3,759,685

APPARATUS FOR CLADDING POLYGONAL CROSS-SECTION LASER RODS

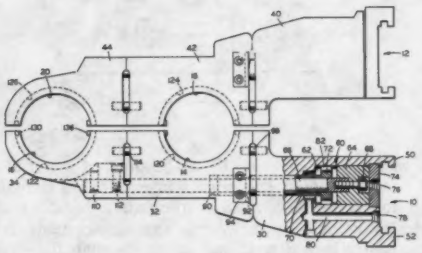
Amadee D. Marino and Clifford W. Ask, Sr., Woodstock, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Original application Feb. 16, 1971, Ser. No. 115,495. Divided and this application Sept. 15, 1972, Ser. No. 289,493
Int. Cl. C03b *23/20*
U.S. Cl. 65—156 **5 Claims**

A side of a polygonal cross-sectioned glass laser rod core may be clad by applying a slab of a suitable cladding

glass material thereto. The fusing of the slab to the core without the formation of entrapped gas bubbles therebetween is accomplished by allowing the slab to rest in essentially line contact with the side of the core at the end adjacent a suitable drawing furnace. The other end of the slab is spaced away from the core material. Means is provided for urging the slab of cladding material toward the side of the core such that as the core and cladding material are drawn within the drawing furnace, the line of contact between the core and cladding gradually traverses the length of the core and cladding thereby forcing any gas out of the space which exists between the core and cladding to provide a bubble-free interface in the resulting clad glass laser rod.

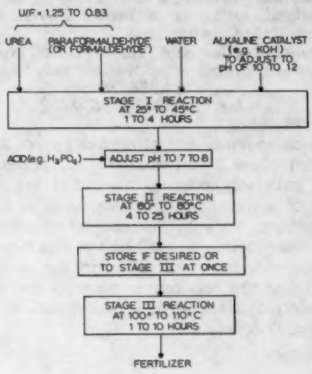
3,759,686
NECK RING ARMS FOR GLASSWARE FORMING MACHINE
Albert J. Trahan, Vernon, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Aug. 13, 1971, Ser. No. 171,599
Int. Cl. C03b *9/00*
U.S. Cl. 65—167 **18 Claims**



A pair of complementary neck ring arms are disclosed for use in a glassware forming machine having a blank mold in which a parison is formed and a blow mold to which the parison is transferred while being held in a pair of neck ring segments supported respectively in the arms. The neck ring arms have recesses for accommodating one or more pairs of neck ring segments so that single, double, triple, or other multiple-gob individual section (IS) glassware forming machines may utilize the arms. The arms are comprised of several extendible sections that permit the spacing between the blank molds which form the parisons on one side of the machine to be different from the spacing between blow molds which receive the parisons at the other side of the machine and also allow the pivot point about which the support arms rotate during transfer between the two sides of the machine to be offset from a point midway between the two sides.

3,759,687
METHOD FOR MANUFACTURE OF UREA-FORMALDEHYDE FERTILIZER
Albert Nobell, P.O. Box 155, Coloma, Calif. 95613
Filed Apr. 30, 1971, Ser. No. 138,941
Int. Cl. C05c *9/00*
U.S. Cl. 71—28 **9 Claims**

An improved urea-formaldehyde fertilizer is made by reacting at 25° to 45° C. for one to four hours an alkaline aqueous mixture at pH 10 to 12 of urea and paraformaldehyde or formaldehyde in a urea-to-formaldehyde mol ratio of about 1.25 to about 0.83. Then the pH is adjusted to between 7 and 8, and the product is heated to between 60° and 80° C. for from 4 to 25 hours. Finally, in the third stage of treatment the product is heated at 100° to 110° C. for from 1 to 10 hours. The resulting


U/F = 1.25 TO 0.83
UREA
PARAFORMALDEHYDE (OR FORMALDEHYDE)
WATER
ALKALINE CATALYST (e.g. KOH) TO ADJUST TO pH OF 10 TO 12
STAGE I REACTION AT 25° TO 45°C 1 TO 4 HOURS
ACID (e.g. H_3PO_4)
ADJUST pH TO 7 TO 8
STAGE II REACTION AT 60° TO 80°C 4 TO 25 HOURS
STORE IF DESIRED OR TO STAGE III AT ONCE
STAGE III REACTION AT 100° TO 110°C 1 TO 10 HOURS
FERTILIZER

fertilizer is exceptionally high in cold-water-insoluble nitrogen and has a high Availability Index.

3,759,688
METHOD FOR DEFOLIATING COTTON PLANTS USING PHOSPHATE ESTERS OF 3-HYDROXY-1,2,5 - THIADIAZOLES AND DERIVATIVES THEREOF
Charles Downing, Metuchen, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed Sept. 27, 1971, Ser. No. 184,186
Int. Cl. A01n *9/22*
U.S. Cl. 71—71 **2 Claims**

Phosphate, phosphorothionate, phosphonate and phosphonothionate esters of 3-hydroxy-1,2,5-thiadiazoles and its substituted derivatives are desiccant defoliants for cotton when applied thereto.

3,759,689
METHOD FOR REGULATING PLANT GROWTH
Howard A. Hageman, Southbury, Arthur H. Gevirtz, New Haven, and Bogislav von Schmeling, Hamden, Conn., assignors to Uniroyal, Inc., New York, N.Y.
No Drawing. Original application May 25, 1967, Ser. No. 641,161, now Patent No. 3,632,646. Divided and this application May 21, 1971, Ser. No. 145,970
Int. Cl. A01n *5/00*
U.S. Cl. 71—76 **7 Claims**

Substituted succinamic amides and anilides are used to regulate the growth of plants.

3,759,690
HERBICIDAL COMPOSITIONS CONTAINING 2-CHLORO - 4 - TERT.BUTYLAMINO-6-CYCLOPROPYLAMINO-s-TRIAZINE AND METHOD OF USE THEREFOR
Dagmar Berrer, Riehen, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Original application Mar. 17, 1969, Ser. No. 807,915, now Patent No. 3,629,257, dated Dec. 21, 1971. Divided and this application Oct. 28, 1970, Ser. No. 84,878
Claims priority, application Switzerland, Mar. 20, 1968, 4,147/68; Feb. 27, 1969, 2,946/69
Int. Cl. A01n *9/22*
U.S. Cl. 71—93 **2 Claims**

2 - chloro - 4 - tert.butylamino-6-cyclopropylamino-s-triazine is disclosed as a novel compound useful for controlling aquatic weeds and also weeds and wild grasses in cotton plantations. Compositions containing the same as active ingredient and processes for the control of aquatic weeds and also weeds and wild grasses in cotton plantations are also described.

3,759,691
METHOD FOR PRODUCING INTERMETALLIC CONNECTIONS

Rozica Loitzl, Wettingen, and Claus Schueler, Widen, Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,862
Claims priority, application Switzerland, Sept. 23, 1970, 14,056/70
Int. Cl. H01f *1/06, 1/08*
U.S. Cl. 75—.5 BA 5 Claims

Metal compounds are produced by reacting the initially solid phase metal components, preferably in the form of relatively coarse, intermixed granules, in the presence of a transport substance, such as a halogen, in a sealed system, whereby the reaction temperature and/or the reaction pressure as well as the stoichiometric ratios of the components participating in the reaction are selected so that the resulting compound assumes its most stable thermodynamic state at said reaction temperature and/or reaction pressure.

3,759,692
NICKEL BASE BONDING POWDER

John W. Zelahy, Cincinnati, Ohio, assignor to General Electric Company

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,490
Int. Cl. B22f *9/00*; C22c *19/00*
U.S. Cl. 75—.5 BA 4 Claims

A nickel base, boron including bonding powder for use in bonding alloy members is provided with improved toughness and ductility through the elimination of the boride former and precipitation strengthener titanium and the boride formers and solution strengtheners molybdenum and tungsten, which for some applications have been included in age hardenable bonding powders. Further melting point reduction can be obtained through the addition of elements selected from tantalum and hafnium in the sum of 2–4 weight percent. A unique joint produced in an article between alloy members using such bonding powder is characterized by a recrystallized, nonplanar microstructure including predominantly discrete, dispersed borides rather than a continuous planar boride phase.

3,759,693
METHOD OF PRODUCING REDUCED IRON ORE PELLETS

Kazuo Kunii, Kobe, Reijiro Nishida, Amagasaki, Thoru Tanimura, Kobe, Masaji Kitamura, Nishinomiya, and Shinya Okamoto, Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

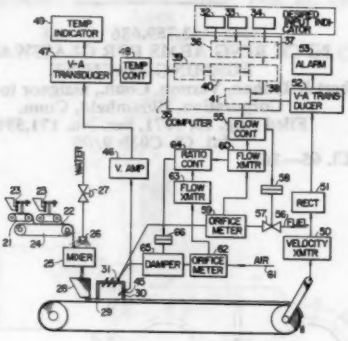
Filed Aug. 5, 1970, Ser. No. 61,324
Claims priority, application Japan, Aug. 18, 1969, 44/65,227
Int. Cl. C21b *1/08, 13/00, 13/08*
U.S. Cl. 75—3 4 Claims

Reduced iron ore pellets have been produced by a method which combines the use of internal and external solid reductants, and is carried out in conjunction with a grate kiln process. Green pellets which are globules of fine ground ore, binders, and internally applied solid reductants, are pelletized. These pellets are preheated and hardened on a travelling grate using waste gases from a rotary kiln. The preheated and hardened pellets are discharged into the rotary kiln and external solid reductants are simultaneously charged, so that the pellets may be subjected to the combined action of the internally and externally applied solid reductants. The pellets have good physical properties and sufficiently high crushing strength to permit them to withstand destructive and abrasive actions to which they are subjected during operation. The present method is economically effective to produce highly metallized pellets on a mass production basis.

3,759,694
METHOD FOR SINTERING TO-BE-SINTERED MATERIAL

Ikumi Koga, Akira Kobayashi, and Tsuneo Ikeda, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 846,090, July 30, 1969. This application Jan. 6, 1972, Ser. No. 215,731
Claims priority, application Japan, Aug. 1, 1968, 43/54,862
Int. Cl. C21b *1/00*
U.S. Cl. 75—5 4 Claims



A method for sintering the to-be-sintered material carried on the moving fire grate while a forced draught is given downward thereto, so as to obtain a durable surface of the sinter bed, by measuring the surface temperature of the sinter bed after it has passed through the igniting furnace and adjusting the heat source of the igniting furnace and other factors, to control the surface temperature of said sinter bed in the igniting furnace.

3,759,695
PROCESS FOR MAKING FERROSILICON

James H. Downing, Clarence, N.Y., assignor to Union Carbide Corporation

No Drawing. Filed Sept. 25, 1967, Ser. No. 670,401
Int. Cl. C22d *7/00*; C21c *5/52*; C21b *1/08*
U.S. Cl. 75—10 2 Claims

An electric furnace submerged arc process for making ferrosilicon by reacting agglomerates of finely divided carbon, iron ore and silica.

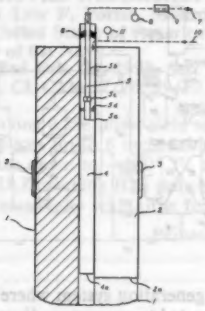
3,759,696
METHOD FOR THE INTRODUCTION OF HYDROCARBON OILS INTO AN ELECTRIC SUBMERGED ARC FURNACE

Einar Falkum, Porsgrunn, and Ivar Brunborg, Oslo, Norway, assignors to Norsk Hydro-Elektrisk Kvaelstofaktieselskab, Oslo, Norway

Filed Aug. 11, 1969, Ser. No. 849,045
Int. Cl. C21c *5/52*; C22d *7/00*; H05b *7/06*
U.S. Cl. 75—11 6 Claims

A method for the introduction of hydrocarbon oils to the hot zones of a submerged arc reduction furnace through a substantially vertical canal in the electrode. The oil is mixed with disintegrated solid reactants to be used in the metallurgical process of the furnace. The mixture obtained is fed through a conduit which at least with its lower end projects into the vertical canal. The lower end opening of the conduit is substantially smaller than the cross section of the canal. The mixture is allowed to fall from the lower end of the conduit to reach

the interior of the furnace after a free fall through the canal, and a gas blows downward through the canal. A hollow electrode is used having a feed spout provided centrally within the vertical canal and above the high temperature region of the electrode, the outlet opening



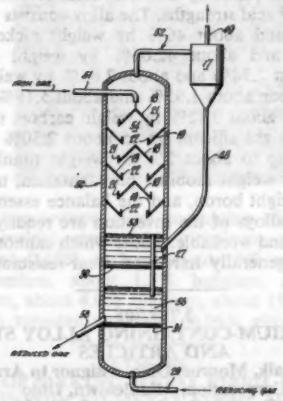
of the spout being substantially smaller than the cross section of the canal of the electrode, and a conduit connects the spout with a source of the material to be fed through the spout.

3,759,697

IRON ORE REDUCTION PROCESS

William J. Metrailer and Robert C. W. Welch, Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Sept. 30, 1970, Ser. No. 76,808
Int. Cl. C21b *13/14*
U.S. Cl. 75—26 8 Claims



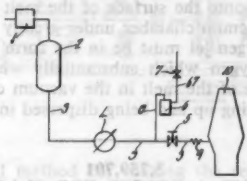
The direct reduction of iron ore is improved by passing the ore downwardly through an initial non-fluidized or hindered-fall reduction zone in countercurrent contact with reducing gas to partially reduce the ore to wustite. The wustite produced is immediately added to a ferrous reduction zone in which the ore is fluidized and reduced to a highly metallized material. The process eliminates the need for an ore preheater.

3,759,698

METHOD OF BLOWING REDUCING GAS INTO A BLAST FURNACE

Kazuo Omori, Yoshiaki Hara, and Masaaki Iguchi, Himeji-shi, Japan, assignors to Fuji Iron & Steel Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1969, Ser. No. 876,535
Claims priority, application Japan, Nov. 20, 1968, 43/85,013, 43/85,014; Feb. 20, 1969, 44/12,867, 44/12,868, 44/8,845
Int. Cl. C22b *5/00*
U.S. Cl. 75—42 6 Claims



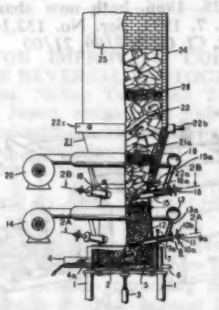
Method for blowing a reducing gas into a blast furnace in which the reducing gas is produced in a reducing gas generator, supplying gaseous materials into the reducing gas generator under specific conditions with the temperature of the produced gas controlled and the temperature-controlled gas being blown in the blast furnace.

3,759,699

PROCESS FOR MELTING SCRAP WITH A PLURALITY OF OPPOSITELY DIRECTED HEATING MEANS

Lewis J. Geiger, Jr., Edison, and James W. Estes, Piscataway, N.J., assignors to Airco, Inc., New York, N.Y.

Original application Aug. 11, 1967, Ser. No. 659,946, now Patent No. 3,603,571, dated Sept. 7, 1971. Divided and this application Apr. 21, 1971, Ser. No. 136,184
Int. Cl. C21c *1/02*
U.S. Cl. 75—43 6 Claims



In a shaft furnace, method for melting low density metallic scrap. Burners and/or tuyeres are located at two different levels in the body portion of the furnace. The charge is preheated by hot gases rising in the furnace stack, and melted at the upper burner level. As the molten metal trickles down over a support bed, which may either be coke, other type of carbon, or a refractory material, it is superheated to the desired spout temperature, and to provide a product of the desired analysis. A feature is the configuration of burners which imposes a swirling motion on gases entering the furnace.

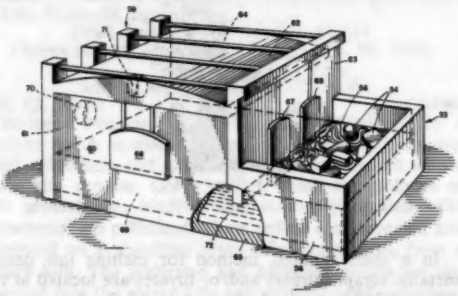
3,759,700
PROCESS OF REFINING METAL MELTS BY SUPERSONIC OXYGEN BLOW
Arnulf Diener, Dortmund, and Horst Kutscher, Dortmund-Berghofen, Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany
Filed Jan. 22, 1970, Ser. No. 4,917
Claims priority, application Germany, Jan. 20, 1969, P 19 04 442.9
Int. Cl. C21c 7/00
U.S. Cl. 75—60 2 Claims

In a process of refining metal melts, particularly iron melts and steel melts, oxygen is blown at supersonic velocity from an oxygen lance, preferably fitted with a Laval nozzle, onto the surface of the melt which is contained in a vacuum chamber under greatly reduced pressure. The oxygen jet must be in the form of a cohesive stream of oxygen which substantially wholly impinges on the surface of the melt in the vacuum chamber without first breaking up and being dispersed in the chamber.

3,759,701
METHOD AND A DEVICE FOR SLAG-REMOVAL
Masashi Kawana, Makoto Saegusa, Kenzo Ohsugi, and Naohiro Nohara, Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Kobe City, Japan
Filed June 22, 1970, Ser. No. 48,110
Claims priority, application Japan, June 22, 1970, 45/53,076
Int. Cl. C21c 7/00
U.S. Cl. 75—61 5 Claims

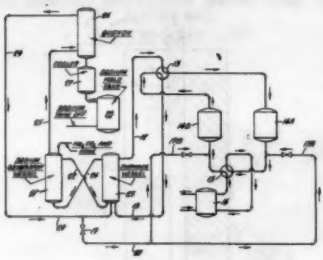
A device, as well as a method, for easy and complete removal of slag from a molten metal, which device consists of a plate member fitting in the top of a vessel containing the molten metal and a hole bored through the plate member. The shape of the bottom surface and the apparent specific gravity of the plate member are such that the slag is collected to the hole as the plate member is placed on the molten metal, for ensuring separation thereof.

3,759,702
METHOD OF MELTING ALUMINUM
Edwin M. Horak, Skokie, Ill., assignor to Chemetron Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 17,340, Mar. 6, 1970, which is a continuation of application Ser. No. 545,946, Apr. 28, 1966, both now abandoned. This application Apr. 7, 1971, Ser. No. 132,142
Int. Cl. C22b 7/00, 21/00
U.S. Cl. 75—63 5 Claims



Method of producing aluminum alloy from scrap aluminum which comprises melting aluminum scrap in a forehearth in an unconfined atmosphere with a nonoxidizing oxy-fuel flame, retaining the melt in a furnace, adjusting the composition of the metal in the furnace to produce an aluminum alloy, and withdrawing substantially all of the aluminum alloy from the furnace.

3,759,703
USE OF THERMAL REGENERATOR PAIR IN SODIUM RECOVERY PROCESS
Victor Manuel Chong, Media, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.
Filed Nov. 15, 1971, Ser. No. 198,819
Int. Cl. C22b 27/00
U.S. Cl. 75—66 3 Claims



In a sodium generation system where sodium carbonate and coke are reacted to generate sodium, the improvement comprising the cyclic operation of a pair of thermal regenerators whereby in one half-cycle the CO_2 off gas from the sodium generator is passed through one of said regenerators having an internal temperature below the fusion point of sodium carbonate thereby trapping any volatilized carbonate in said regenerator, and in a second half-cycle, carbon monoxide is burned in said regenerator whereby the sodium compounds trapped in said regenerator are vaporized and returned with the exiting gases to said sodium generation system.

3,759,704
CORROSION-RESISTANT ALLOYS
John H. Culling, Kirkwood, Mo., assignor to Carondelet Foundry Company, St. Louis, Mo.
No Drawing. Filed June 14, 1971, Ser. No. 153,026
Int. Cl. C22c 37/00
U.S. Cl. 75—122 10 Claims

An alloy which is resistant to corrosion by both oxidizing and reducing sulfuric acid solutions over a wide range of acid strengths. The alloy consists of between about 36% and about 46% by weight nickel, between about 33% and about 42.06% by weight chromium, between about 2.94% and about 7.84% by weight molybdenum, between about 1.95% and about 5.18% by weight copper, up to about 0.12% by weight carbon, up to about 1.50% by weight silicon, up to about 2.50% by weight manganese, up to about 2% by weight titanium, up to about 4% by weight niobium plus tantalum, up to about 0.01% by weight boron, and the balance essentially iron. Most of the alloys of the invention are readily weldable, machinable, and workable. Those which cannot be readily worked are generally hard and wear-resistant.

3,759,705
CHROMIUM-CONTAINING ALLOY STEEL AND ARTICLES
David L. Chalk, Monroe, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
No Drawing. Continuation-in-part of abandoned application Ser. No. 748,971, July 31, 1968. This application June 10, 1971, Ser. No. 151,892
Int. Cl. C22c 37/10, 39/02
U.S. Cl. 75—124 9 Claims

Alloy steel suited to elevated-temperature applications and sheet, strip, and the like fashioned of the same of ready formability and comparatively low cost containing about 16% to 19% chromium, silicon about .5% to about 1.6% to about 2.7% with the sum of the silicon and aluminum contents not exceeding 3.9%, carbon not over

.1% and preferably less than .07%, manganese up to about 1% but preferably less than .50%, nitrogen up to about .05%, about .15% to about .8% titanium and/or about .15% to about 1.25% columbium, and remainder substantially all iron.

3,759,706
HIGH-TOUGHNESS ALLOY STEEL WITH IMPROVED WELDABILITY

Brian Mravic and Lew F. Porter, Monroeville, Pa., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Feb. 23, 1972, Ser. No. 228,738
Int. Cl. C22c *37/10, 39/20*
U.S. Cl. 75—124 **2 Claims**

An alloy steel having 0.2% offset yield strengths greater than 100K s.i. in plates up to 6 inches thick, high toughness at temperatures down to —120° F., and a very low tendency toward HAZ cracking. The principal constituents of the steel come essentially within the following ranges:

Elements:	Percentage by weight
C	0.09–.013
Mn	0.60–0.85
P (max.)	0.015
S (max.)	0.020
Si	0.20–0.35
Ni	2.5–4.5
Cr	0.40–1.20
Mo	0.25–0.60
V	0.05–0.10
Al	0.015–0.035

Balance essentially iron.

3,759,707
TUNGSTEN CONTAINING ALLOY

John Hockin and Carl H. Lund, Arlington Heights, and Wilbert P. Danesi, Deerfield, Ill., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,444
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **6 Claims**

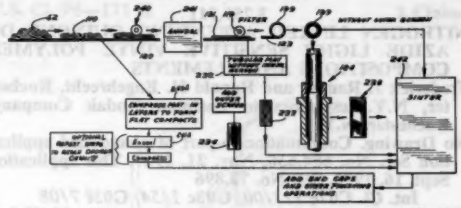
A high temperature alloy containing nickel and, in percent by weight, about 5.5% aluminum, about 0.02% boron, about 0.18% carbon, about 10% cobalt, about 9.5% chromium, about 1.5% hafnium, about 2.5% molybdenum, about 4.0% titanium, about 1% vanadium, about 3.7% tungsten and about 0.06% zirconium.

3,759,708
METHOD OF MAKING METAL FIBRIL MATS AND REINFORCED METAL FIBRIL MATS

Bertil J. Sundberg, Minneapolis, and Andreas Luksch, Deephaven, Minn., assignors to Brunswick Corporation

Continuation of application Ser. No. 853,548, Aug. 27, 1969, now Patent No. 3,705,021, which is a division of application Ser. No. 391,708, Aug. 24, 1964, now Patent No. 3,505,038. This application July 3, 1972, Ser. No. 268,537
Int. Cl. B22f *3/12, 7/04*
U.S. Cl. 75—208 R **18 Claims**

A randomly oriented metal fibril mass is air laid and bound on at least one surface by a metal reinforcement. The porosity or density of the fibril mass may be preselected as desired. The fibrils in the mass and the fibrils adjacent the reinforcement can be attached at their contact points to strengthen the composite. A flat or tubular filter can be fashioned from the reinforcement.



The general method for making the reinforced fibril mass utilizes techniques which provide for, among other things, graded densities.

3,759,709
METHOD FOR PRODUCING POROUS METAL PRODUCTS

Joseph J. Asbury, Knoxville, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Apr. 28, 1970, Ser. No. 32,766
Int. Cl. B22f *1/00*
U.S. Cl. 75—211 **3 Claims**

Porous metal products having wall thicknesses of about 1.0 to about 6.0 inches and porosities in the range of about 20 to 70 percent with interconnecting pores are prepared by filling a receptacle with fine metal powder, heating the metal to a temperature slightly below the sintering temperature of the metal, maintaining the lower temperature for a duration sufficient to provide a temperature equilibrium throughout the powder, increasing the temperature of the metal to the sintering temperature thereof, and immediately thereafter decreasing the temperature to inhibit further sintering.

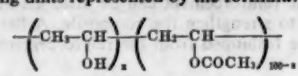
3,759,710
PROCESS FOR IMPROVING COLOR DEVELOPABILITY OF REVERSAL PHOTOGRAPHIC FILMS

Tadashi Nagae, Nobuo Tsuji, and Takushi Miyazako, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara-shi, Kanagawa, Japan

No Drawing. Filed May 26, 1971, Ser. No. 147,254
Claims priority, application Japan, May 26, 1970, 45/45,012
Int. Cl. G03c *1/04, 5/50, 7/16*
U.S. Cl. 96—22 **7 Claims**

In a photographic reversal color process employing a photographic element containing three photographic silver halide emulsion layers, comprising first exposing said element to light to produce a latent image therein, developing the exposed element in a photographic black and white developer to produce a black and white negative image, exposing the element to a light of a color to which the first exposed silver halide emulsion layer is sensitive, and developing the resulting element in a color developer for producing a colored image, said color developer containing an aromatic primary amino color developing agent and a photographic color coupler selected from the group consisting of a magenta-forming pyrazolone color coupler, a cyan-forming phenolic color coupler and a yellow-forming open chain ketomethylene color coupler, the improvement which comprises utilizing a binder for said silver halide comprising gelatin and a

water-soluble copolymer having a number average molecular weight of from about 5,000 to about 200,000 having repeating units represented by the formula:



wherein $50 \leq x < 100$ is disclosed.

3,759,711

NITROGEN LINKED APPENDING QUINONE DIAZIDE LIGHT SENSITIVE VINYL POLYMER COMPOSITIONS AND ELEMENTS

Frederick J. Rauner and Ronald H. Engebrecht, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 684,636, Nov. 21, 1967. This application Sept. 16, 1970, Ser. No. 72,896

Int. Cl. C07c *113/00*; G03c *1/54*; G03f *7/08*

U.S. Cl. 96—36 **23 Claims**

A light sensitive polymer having quinone diazide groups linked through nitrogen atoms to the polymer chain is particularly useful in photoresist compositions and for lithographic purposes.

3,759,712

PHOTOGRAPHIC PROCESSING METHOD

William J. Kammerer, Towsend, and Robert L. MacNeil, Wareham, Mass., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed July 26, 1971, Ser. No. 166,241

Int. Cl. G03c *5/26*

U.S. Cl. 96—50 R **2 Claims**

A black and white silver halide photographic film is processed by first forming a transparent, acid inactive developer overcoating layer on the surface of the film. An image exposure is then made through the layer onto the film, and the overcoated film then immersed in alkaline water.

3,759,713

FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION SUPERSENSITIZED WITH A MEROCYANINE DYE AND A CARBOCYANINE DYE

Raymond Leopold Florens, Edegen, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

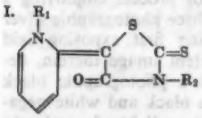
No Drawing. Filed July 14, 1971, Ser. No. 162,612

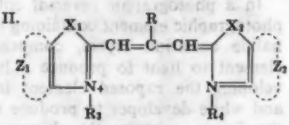
Claims priority, application Great Britain, Aug. 14, 1970, 39,353/70

Int. Cl. G03c *1/08*

U.S. Cl. 96—126 **21 Claims**

A photographic direct-positive silver halide emulsion is described wherein the silver halide grains have a central core of silver halide containing centers promoting the deposition of photolytic silver and over said core an outer shell of fogged silver halide and wherein said outer shell comprises absorbed thereto a 2-pyridine-rhodanine merocyanine dye of Formula I and a carbocyanine dye of Formula II

I. 

II. 

wherein:

R_1, R_2, R_3 and R_4 represent a saturated or unsaturated aliphatic group, a cycloaliphatic group or an aryl group,

X_1 and X_2 represent oxygen, sulphur, selenium or $N(R_5)$ wherein R_5 has the significance given for R_1–R_4,

Z_1 and Z_2 represent the atoms necessary to close a fused-on aromatic nucleus of the benzene series,

R is hydrogen, alkyl, aralkyl, or aryl, and

X is an anion but does not exist when one of R_3, R_4, and R_5 contains an anionic group.

The combination of dyes used has a supersensitizing effect on the emulsion. The total speed is markedly increased as compared with the use of either dye alone and less stain is produced.

3,759,714

HIGH PROTEIN FOOD PRODUCT

Morris P. Burkwall, Jr., Barrington, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Mar. 23, 1970, Ser. No. 22,024

Int. Cl. A23l *1/20*; A23j *1/00*

U.S. Cl. 99—14 **6 Claims**

A high protein food product comprising specified amounts of a flavoring agent, pregelatinized starch, a high protein binding agent, water, and either sugar, sugar equivalents, or mixtures thereof.

3,759,715

PROCESS OF MAKING A TEXTURED, EXPANDED FOOD PRODUCT

Stephanus F. Loepiktie, St. Louis, and Ronald Jacob Flier, Glendale, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,634

Int. Cl. A23j *3/00*

U.S. Cl. 99—17 **18 Claims**

An expanded protein food product having the resiliency, chewiness and mouthfeel characteristics of real meat and further characterized by excellent rehydration characteristics is produced from a vegetable protein source material by forming a dough thereof, confining a major surfacial portion of the dough, and subjecting the dough to an elevated temperature and pressure in the order of 80–120 p.s.i. followed by pressure release, to controllably expand the dough along the axis of the unconfined surfacial portions and produce a food product having textural characteristics very similar to real meat.

3,759,716

PRODUCTION OF FISH PROTEIN

Marvin Schulman, Monroe, and Esra Pitchon, Flushing, N.Y., and Charles D. Anderson, Lebanon, N.J., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,129

Int. Cl. A23j *1/04*

U.S. Cl. 99—18 **7 Claims**

The invention entails an improved process for preparing bland fish protein concentrate by boiling whole frozen or fresh fish to separate the flesh from the bone, and removing the oils from the water surface generated during boiling. The slurry is then acidified to suppress protein solubility and the mixture is ground or comminuted so as to substantially retain the bones at original size, whereupon the slurry is screened to remove water and fine solids. The mixture is then extracted with a bland solvent and dried to a bland protein concentrate. Deboning may occur after boiling, after acidification or after drying.

3,759,717

CHEMICALLY LEAVENED BAKERY AND CONFECTIONARY PRODUCTS

Bruce D. Buddemeyer, Overland Park, Kans., and John R. Moneymaker, Kansas City, Mo., assignors to The Paniplus Company, Kansas City, Mo.

No Drawing. Filed June 30, 1964, Ser. No. 379,387

Int. Cl. A21d *13/08*

U.S. Cl. 99—92 **35 Claims**

Chemically leavened cake products and confectionary products having incorporated therein an addition agent containing a non-toxic, mono aliphatic ester of a dicarboxylic acid wherein said dicarboxylic acid contains up to ten carbon atoms and said mono aliphatic group contains 12 to 24 carbon atoms.

3,759,718

PROCESS FOR PREPARATION OF IKURA (SALMON EGG)

Takashi Sugihara, Kashiwa, Chiyoshi Yashima and Hideo Tamura, Tokyo, Mitsuyasu Kawasaki, Niiza, and Shogo Shimizu, Tokyo, Japan, assignors to Riken Vitamin Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,683
Claims priority, application Japan, Dec. 30, 1970, 46/122,091
Int. Cl. A23l *1/325*
U.S. Cl. 426—47 8 Claims

Process for preparation of "ikura" characterized in separating the granular eggs of salmon and trout through the action of protease to decompose the supporting tissue as well as the ovary membrane of said eggs.

3,759,719

PRESERVATION OF FRUITS WITH SULFATE AND DIHYDROGEN PHOSPHATE SALTS OF 5-ACETYL-8-HYDROXY-QUINOLINE

Ernst Hodel and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 704,588, Feb. 12, 1968. This application Dec. 8, 1970, Ser. No. 96,240
Claims priority, application Switzerland, Feb. 16, 1967, 2,281/67
Int. Cl. A23b *7/00*
U.S. Cl. 99—154 5 Claims

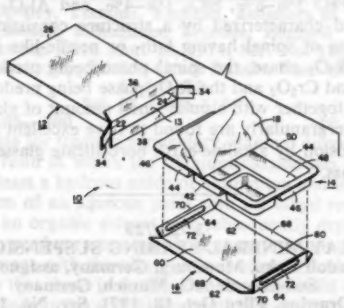
A method for preserving edible fruits and parts of plants against microbial deterioration by means of microbicidally effective amounts of the sulfate and phosphate salts of 5-acetyl-8-hydroxy-quinoline are described. While 5-acetyl-8-hydroxy-quinoline and its hydrochloride have strong irritant action on the mucous membranes and skin of humans, the new salts are virtually free from these drawbacks when applied in microbicidally effective amounts to the surface of edible plant parts.

3,759,720

FOOD PACKAGING SYSTEM AND TEMPERATURE-RESISTANT INSERT THEREOF

Gar Young, 1438 S. Broad St., Philadelphia, Pa. 19146

Filed Sept. 27, 1971, Ser. No. 183,816
Int. Cl. B65d *85/00, 5/38, 5/50*
U.S. Cl. 99—171 H 2 Claims



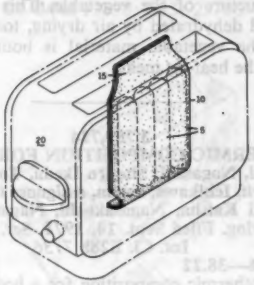
A food packaging system having an outer sleeve defining an inner compartment in which a food tray and a temperature resistant insert is disposed. The food tray has a bottom wall supported on a bottom section of the temperature resistant insert. The temperature resistant insert has upstanding side panels and end panels which are integrally formed with the bottom section and which are disposed adjacent side walls and end walls, respectively, of the food tray. The end panels have die-cut finger gripping openings disposed therein, and the end panels are disposed adjacent end closures of the under sleeve.

3,759,721

METHOD OF HEATING A PACKAGED FOODSTUFF IN A TOASTER

Robert Lyle Hawley, Webster Groves, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of abandoned application Ser. No. 858,684, Sept. 17, 1969. This application Sept. 30, 1971, Ser. No. 185,129
Int. Cl. B65b *25/22*
U.S. Cl. 99—171 H 2 Claims



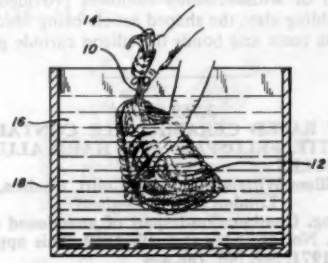
Non-metallic, sorbent material is utilized in forming an envelope surrounding a prepared food product which is to be heated before consumption. The package may be moistened with water, and placed in a toaster which will permit heating or reconstitution of the food product without incineration of the sorbent material.

3,759,722

METHOD FOR EVACUATING PACKAGES

Selwyn Simon, Glencoe, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 31, 1970, Ser. No. 24,187
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 13 Claims



An improved method for vacuum packaging an uncured red meat article is provided, in which a shrinkable plastic film bag containing the meat article and having an open top is progressively subjected to a peripheral pressure exerted by a fluid at a temperature not so cold as to stiffen the film but not warm enough to detrimentally affect the surface of the meat or to shrink the film. The open top of the bag is maintained in communication with the atmosphere. The air in the bag is expelled rapidly through the open top under the pressure of the fluid onto the bag. The bag is then closed and, if desired, heat shrunk.

3,759,723
PROCESS FOR MAKING A DEHYDRATED MEAT PRODUCT

Sam Gunson, Pavenham, Alan Heyes, Oakley, and Anthony John Hanson Sale, Sharnbrook, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,952
Int. Cl. A23b 7/02
U.S. Cl. 99—208 3 Claims

Dried meat products are prepared by forming a mix containing uncooked comminuted meat and a comminuted starchy vegetable or cereal material which retains the cellular structure of the vegetable. This mix is shaped, heat-set and dehydrated by air drying, to form a product in which the vegetable material is bound in a matrix formed by the heat-set meat.

3,759,724
EXOTHERMIC COMPOSITION FOR HOT TOPS

Sunao Nishi, Nagasaki, Shojiro Ikeda, Tokyo, and Takayoshi Torii, Ichikawa, Japan, assignors to Shinto Kogyo Kabushiki Kaisha, Nagasaki-shi, Nagasaki-ken, Japan

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,468
Int. Cl. B28b 7/36
U.S. Cl. 106—38.22 4 Claims

In an exothermic composition for a hot top on a foundry mold, there are provided from about 5 to 30% by weight of fibers each having a length of about 0.5 to 30 mm., the fibers being evenly dispersed in the exothermic composition to seize the fine particles of the composition and to permit the escape of combustion gas bubbles through numerous cavities formed therein.

3,759,725
REFRACTORY ARTICLES FOR USE WITH MOLTEN FERROUS METALS

William John Steen, Wirral, England, assignor to Morgan Refractories Limited, Neston, Wirral, England

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,041
Claims priority, application Great Britain, Aug. 7, 1970, 38,234/70
Int. Cl. C04b 35/52, 35/56, 35/70
U.S. Cl. 106—44 6 Claims

Articles, or parts of articles, which in use are in contact with molten ferrous metals, are made from a mix of silicon carbide particles and more finely-divided alumina, with or without silica additions provided by for example adding clay, the shaped article being fired so that the alumina coats and bonds the silicon carbide particles.

3,759,726
KAOLIN BASED CERAMIC TILE CONTAINING GRANITE, FELDSPAR, AND HARD ALUMINA PARTICLES

William Wittels, 128 Swan Court, Chelsea, London SW. 3, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 865,515, Oct. 10, 1969. This application Aug. 2, 1971, Ser. No. 168,494
Claims priority, application Great Britain, Oct. 11, 1968, 48,438/68
Int. Cl. C04b 33/00, 33/16, 35/16
U.S. Cl. 106—45 7 Claims

Artificial stone tiles are produced by firing a compacted mass of granite and kaolin, containing a substantial proportion of coarse fused alumina particles to provide slip resistance. In addition the mass preferably contains fine particle size alumina and/or quartz to provide wear resistance. The compacted mass is fired for a sufficient time to effect surface melting, but not complete vitrification, of the feldspar present in the granite, which is incorporated in the mass in the form of relatively fine particles. The mass is formulated so as to include not less than 10% feldspar and not more than about 1.2% iron (calculated as iron oxide) in order to provide tiles of low water absorption and high acid resistance.

3,759,727
COATINGS

Raymond Louis Dietz, Toledo, Ohio, and Allan L. McFadden, Monroe, Conn., assignors to Owens-Illinois, Inc.

No Drawing. Filed Oct. 27, 1970, Ser. No. 84,541
Int. Cl. C03c 3/12, 3/22, 3/30
U.S. Cl. 106—49 9 Claims

Provided is an overglaze composition particularly useful for protecting a microelectronic circuit from environmental shock and contamination. Such an overglaze comprises by weight about 15–60 percent PbO, 12–40 percent B_2O_3, 5–45 percent ZnO and produces, upon being fired from a printed paste at a firing temperature below about 650° C., a vitreous glass coating which is substantially hermetic in its sealing characteristics. The overglaze composition may optionally accommodate up to 12 percent by weight of other various oxides such as, for example, SiO_2, CuO, V_2O_5, BaO, Bi_2O_3, TiO_2, ZrO_2 and/or may optionally accommodate up to 25 percent by weight of dispersed particulate ceramic materials. In addition, the coating so formed, when fired upon a ceramic substrate having a coefficient of thermal expansion of less than about 100×10^{-7} in./in./° C., exhibits a tenacious bond and a structural stress at the bond interface of between about 2000 p.s.i. in compression to about 1200 p.s.i. in tension. Printing pastes are formed from these compositions by admixing the glass produced, in particulate form, with a conventional liquid organic vehicle in amounts sufficient to render the pastes printable.

3,759,728
HIGH-CHROME FUSED CAST REFRACTORIES

William A. Miller, Jamestown, and Henry R. Weiler, Jr., Lakewood, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,857
Int. Cl. C04b 35/42
U.S. Cl. 106—59 7 Claims

Fused cast refractories having an approximate composition within the range Cr_2O_3 75%–85%, MgO 5%–10%, FeO 5%–8%, SiO_2 1%–4%, and Al_2O_3 less than 6% and characterized by a structure consisting mainly of grains of spinel having lath- or needle-like inclusions of an R_2O_3 phase, the spinel phase being predominantly MgO and Cr_2O_3 and the R_2O_3 phase being predominantly Cr_2O_3, together with a quite small amount of glass occurring intergranularly are found to have excellent resistance to corrosion by alkaline-earth borosilicate glasses such as "E" glass.

3,759,729
CLAY-MINERAL-BEARING SUSPENSIONS

Rudolf Fahn, Moosburg, Germany, assignor to Sud-Chemie AG, Munich, Germany

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,326
Claims priority, application Germany, Oct. 26, 1970, P 20 52 506.8
Int. Cl. C04b 7/02
U.S. Cl. 106—90 10 Claims

Clay-mineral-bearing suspensions, e.g., of bentonite, of highly increased viscosity are provided by adding thereto, as binding viscous clay-mineral-bearing suspensions containing, as a binding agent, a water-soluble polyethylene oxide with a molecular weight of from about 300,000 to more than about 5,000,000, in amounts of from 0.02 to 0.5 percent by weight, based on the weight of the dry clay mineral.

3,759,730

PROCESS FOR UTILIZING COAL RESIDUES

Leon-Jules Trief, 220 Rue des Bannes, Roclenge-sur-Geer, Belgium

Filed Apr. 30, 1971, Ser. No. 138,873
Claims priority, application Luxembourg, May 4, 1970, 60,850
Int. Cl. C04b 7/14, 7/24
U.S. Cl. 106—103 15 Claims

Coal residues such as power station ash or mining waste products, are mixed with calcium carbonate and fired at about 1300° C. The fired mixture is then heated to at least about 1500° C. to transform it to a molten slag. The molten slag is quenched from about 1500° C. to form granules which are comminuted to get a pure hydraulic binder into which is incorporated a setting and hardening agent.

3,759,731

PIGMENT MIXTURE OF POLAR AND NONPOLAR SYMMETRICAL/ASYMMETRICAL DISAZO DYESTUFFS

Rudolf Kühne, Frankfurt am Main, Heinrich Hamal, Schwalbach, Taunus, Georg Geissler, Frankfurt am Main, Willy Herbst, Hofheim, Taunus, and Joachim Ribka, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,817
Claims priority, application Germany, Mar. 14, 1970, P 20 12 152.2
Int. Cl. C08h 17/14
U.S. Cl. 106—288 Q 4 Claims

Mixtures of disazo dyestuffs obtained by coupling diazotized 3,3'-dichloro-4,4'-diamino-diphenyl with a mixture consisting of one or two polar coupling components of the acetoacetylamino-benzene and 1 - aryl-pyrazolone - (5) series containing carboxy and/or sulfonic acid groups and another mixture consisting of one or two non polar coupling components of the acetoacetylamino-benzene and 1-aryl-pyrazolone-(5) series without any water-solubilizing groups. These dyestuff mixtures show improved rheological properties and an improved tinctorial strength. Moreover, they yield purer shades and have an increased transparency.

3,759,732

PROCESS FOR THE MANUFACTURE OF A PIGMENT

Walter Twist, Fairfield, and Keith Goldsborough and John James Hinley, Teesside, England, assignors to British Titan Limited, Billingham, Teesside, England

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,805
Claims priority, application Great Britain, Mar. 18, 1970, 13,168/70
Int. Cl. C09c 1/36
U.S. Cl. 106—300 20 Claims

A process for treating pigmentary titanium dioxide with an alkyd resin in which the titanium dioxide has a coating of at least a hydrous oxide of aluminium and is mixed in the form of an aqueous paste with the alkyd resin dissolved in an organic solvent and subsequently drying the mixture to produce a treated pigmentary titanium dioxide. The treatment with the alkyd resin is effected under such conditions that there is no filtration or other solid separation process between the mixing and drying operations.

3,759,733

PIGMENT COMPOSITIONS

Gordon Frank Bradley, Paisley, David Price, Beith, and Alexander Hamilton, Giffnock, Scotland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed July 14, 1971, Ser. No. 162,632
Claims priority, application Great Britain, July 16, 1970, 34,427/70
Int. Cl. C09b 29/00, 31/00
U.S. Cl. 106—309 17 Claims

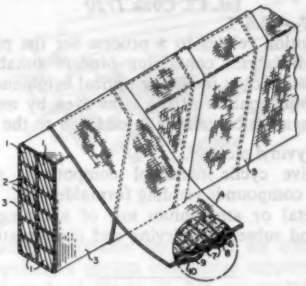
A process in which a monoazo pigment composition is produced which comprises coupling a diazotised pigment aniline or a diazotised substituted pigment aniline with a pigment coupling agent and incorporating in the pigment a water-soluble azo dyestuff.

3,759,734

BINDING TAPE AND METHOD OF MAKING SAME

Morris A. Mendelsohn, Pittsburgh, and James D. B. Smith, Turtle Creek, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1971, Ser. No. 210,878
Int. Cl. B44d 1/098; C03c 25/00
U.S. Cl. 117—4 32 Claims



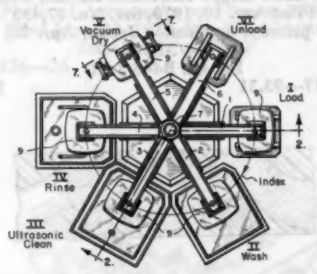
A binding tape is made by coating a ribbon having glass fibers in the fill direction and a flexible, thermally-stable fiber in the warp direction, with a swellable resin composition and removing the excess composition. The tape is lap-wound over an electrical conductor which is then immersed in solventless resin under pressure. The conductor is removed from the solventless resin and the tape prevents the solventless resin from seeping out before it is cured.

3,759,735

METHOD FOR CLEANING THE SEALING LAND OF A CATHODE RAY TUBE FACEPLATE PANEL

Raymond J. Pekosh, Niles, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 11, 1970, Ser. No. 71,538
Int. Cl. B44d 5/02
U.S. Cl. 117—33.5 C 3 Claims



A method of manufacturing a cathode-ray tube of a type comprising a glass faceplate panel section to be frit sealed to another envelope section containing an electron gun system for energizing a phosphor screen deposited on the faceplate panel section, while substantially preventing localized failure of the frit seal between the sections upon high-voltage operation of the completed tube. After the phosphor screen is formed, the sealing land of the faceplate panel section is dipped in a liquid cleaning bath which is ultrasonically agitated to remove residue from the screen forming process from the sealing land.

The sealing land is then rinsed with deionized water and vacuum dried. The faceplate panel section is then ready to be frit sealed to the other envelope section containing an electron gun system, completing the manufacture of the cathode-ray tube.

3,759,736

PROCESS FOR THE PRODUCTION OF NONWOVEN FABRICS CONTAINING BINDERS

Hanns Jenny, Aarau, and Juerg Troesch, Allschwil, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Mar. 9, 1971, Ser. No. 122,556
Claims priority, application Switzerland, Mar. 16, 1970, 3,858/70
Int. Cl. C08k *1/20*
U.S. Cl. 117—33.5 T 8 Claims

This invention relates to a process for the production of nonwoven fabrics containing binders suitable to be dyed by reactive dyes including optical brighteners which comprises impregnation of the nonwoven by means of a binder preparation containing in addition to the binder

(a) a polyvinyl alcohol,
(b) reactive cyclic methylol compounds, aldehydes and/or compounds yielding formaldehyde,
(c) a metal or ammonium salt of a strong mineral acid, and subsequent drying and condensation treatment.

3,759,737

DEPOSITION OF HIGH REFRACTIVE INDEX COATINGS ON FRESHLY WET GROUND MICA

Paul W. Wetzold, Yorktown Heights, N.Y., assignor to Paispearl Products, Inc., Hastings-on-Hudson, N.Y.

No Drawing. Filed May 20, 1970, Ser. No. 39,151
Int. Cl. B44d *5/06*
U.S. Cl. 117—54 7 Claims

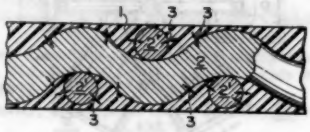
Mica is more uniformly coated, especially with bismuth oxychloride, to form a composite platelet of increased refractive index, by precipitating the coating out of aqueous medium onto undried mica which has been freshly wet ground in deionized water to reduce the particle size of the mica at least 5%.

3,759,738

GRAFT POLYMERIC SUBSTRATE

Teruyuki Misumi, Yokohama, Hirotsugu Miyauchi, Tokyo, Sakae Tsushima, Kawasaki, and Kunihiko Takeda and Toshio Miyaji, Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 10, 1970, Ser. No. 27,433
Claims priority, application Japan, Apr. 26, 1969, 44/31,986
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 14 Claims



Graft polymeric substrate especially suitable for basic matrix for an ion-exchange membrane, which is superior in electrochemical as well as mechanical properties. The substrate is composed of resin of three dimensional net work structure and a woven fabric substance which in itself had free spaces of substantially uniform size in an amount of 20%–80% by volume, said resin closely filling the free space portions of the woven fabrics and being firmly bonded to the fabrics by graft polymerization. Water leakage is substantially zero cc./m.^{2} hr. under 0.5 kg./cm.^{2} differential pressure.

3,759,739

ENVIRONMENTAL PROTECTION SYSTEM

Mike Varlas, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Aug. 26, 1971, Ser. No. 175,235
Int. Cl. B05b *7/20*; B32b *19/04*
U.S. Cl. 117—105.2 5 Claims

A system for protecting the exposed surfaces of reinforced plastic composite structures which are exposed to the weather is disclosed. A sheet of asbestos paper is flame-sprayed with a conductive material, such as aluminum. The conductive surface is coated with a synthetic resin and then the composite is laminated over the structure surface. The resulting surface is resistant to erosion by rain and dust and protects against lightning strikes and static electricity build-up. This system is especially desirable for use on external aircraft structure, large storage tanks, etc.

3,759,740

PROCESS FOR BINDING PIGMENTS TO GLASS FABRICS

James K. Campbell, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Aug. 6, 1968, Ser. No. 750,472, now Patent No. 3,634,297. Divided and this application May 12, 1971, Ser. No. 143,687
Int. Cl. B32b *17/10, 27/12*
U.S. Cl. 117—126 GS 2 Claims

A process is disclosed for binding pigments to glass fabric, said process comprising (A) applying to the glass fabric an aqueous emulsion of (1) a copolymer prepared by emulsion polymerization which consists essentially of (a) 50 to 90 mol percent $(CH_3)_2SiO$ units and (b) 10 to 50 mol percent of $RSiO_{3/2}$ units wherein R is an alkyl or alkenyl radical containing from 1 to 3 carbon atoms, a phenyl radical or a 3,3,3-trifluoropropyl radical, and (2) a water dispersible pigment, and (B) drying the glass fabric. Conventional silicone or organic post-finishes can be applied over the above compositions.

3,759,741

NOVEL INTUMESCENT COATED ARTICLES

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,212
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 117—136 9 Claims

Articles coated with intumescent compositions which comprise certain polycyclic aromatic polysulfonamides, such as naphthalene, anthracene, phenanthrene, biphenyl, and terphenyl polysulfonamides. The intumescent agents may be prepared by conventional techniques and may be employed in conjunction with conventional additives. Among the preferred intumescent agents are the 1,5-, 2,6- and 2,7-naphthalenedisulfonamides and the o,o'-, m,m'- and p,p'-disulfonamidobiphenyls.

3,759,742

TEXTILE FLOOR COVERING

Manfred Salamon, Dormagen, Hans-Jurgen Hagebaum, Nievenheim, Martin Wandel, Dormagen, Cornelius Muhlhausen, Leverkusen, Werner Bau, Opladen, and Gerd-Konrad Reinecke, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 9, 1970, Ser. No. 79,712
Claims priority, application Germany, Oct. 17, 1969, P 19 52 397.8
Int. Cl. B44d *1/09*; D04h *1/48, 1/58*
U.S. Cl. 117—161 KP 6 Claims

Textile floor cover coated with an unfoamed polyurethane elastomer based on a polyhydroxyl compound selected from the group consisting of polyesters of ethylene glycol, propylene glycol, butylene glycol and mixtures thereof, said glycols having two or more terminal hydroxy

groups and an average molecular weight of 300–5000 and a polyisocyanate with an OH/NCO ratio of from 1:0.3 to 1:1.3.

3,759,743

METHOD OF APPLYING COATINGS OF TIN OXIDE UPON TRANSPARENT SUBSTRATES

Andrew G. Menke, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,604
Int. Cl. H05b *33/23*; H05k *3/00*
U.S. Cl. 117—211 12 Claims

An improved technique for producing electrically conducting tin oxide films on the surface of a ceramic substrate by applying a solution of an organotin salt of trifluoroacetic acid to the substrate while it is at a temperature above 800° F.

3,759,744

ELECTROSTATIC RECORDING PAPER AND METHOD OF MAKING

Leonard J. Schliesman, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,323
Int. Cl. G03g *5/00*
U.S. Cl. 117—218 21 Claims

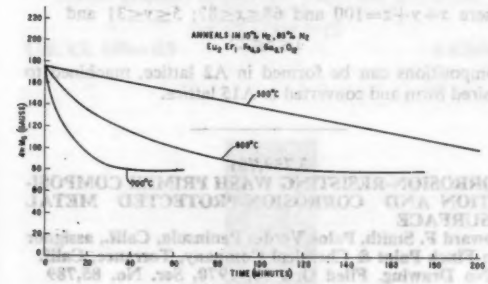
Electrostatic recording paper is made by applying three successive aqueous coats to the machine glazed side of a paper web. The first coat contains titanium dioxide and an electroconductive water dispersible polymer of a vinylbenzyl quaternary ammonium compound. The second coat is oxidized starch and calcium carbonate. The third coat contains calcium carbonate and a carboxylated polyvinyl acetate in ammoniacal solution. The web is dried between successive coatings and may be finally steam treated.

3,759,745

HYDROGEN ANNEALING OF SUBSTITUTED MAGNETIC GARNETS AND MATERIALS SO PRODUCED

Melvyn Dixon, Allentown, Pa., and Arjeh Jehuda Kurtzig, Short Hills, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 14, 1971, Ser. No. 162,517
Int. Cl. H01f *10/02*
U.S. Cl. 117—237 7 Claims



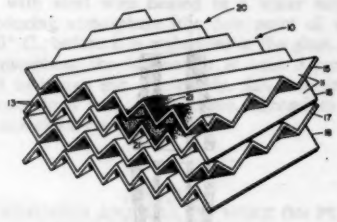
Magnetization values for a variety of magnetic garnets containing partial nonmagnetic substitutional ions replacing iron are altered by annealing in hydrogen-containing atmospheres. Such changes which may be brought about in periods as short as five minutes or less at temperatures of the order of from 500° C. to 800° C. result from the temperature dependence of site preference of such nonmagnetic substitutional ions. Such changes may accomplish a "tailoring" of the garnet material for use in magnetic switches and memories.

3,759,746

POROUS ELECTRODE COMPRISING A BONDED STACK OF PIECES OF CORRUGATED METAL FOIL

John McCallum, Worthington, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 22, 1972, Ser. No. 237,029
Int. Cl. H01m *35/04*
U.S. Cl. 136—24 16 Claims



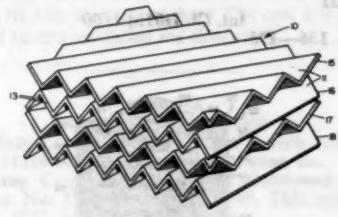
An electrode suitable for use in an electrochemical cell, comprising a porous conductive support comprising a bonded stack of pieces of thin corrugated nickel foil wherein the corrugations are oriented approximately perpendicular to the sides of the electrode and form an array of passages through the electrode, and active material such as cadmium hydroxide or nickel hydroxide substantially uniformly distributed within the passages. The support may comprise also a piece of thin flat nickel foil between adjacent pieces of the corrugated foil, forming a barrier between the passages formed on each side of it. Typically the corrugations in the odd corrugated layers are oriented at a small angle from the perpendicular in one direction and the corrugations in the even corrugated layers are oriented at a small angle from the perpendicular in the opposite direction.

3,759,747

METHOD OF MAKING POROUS CONDUCTIVE SUPPORTS FOR ELECTRODES

Glenn R. Schaer, Columbus, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 22, 1972, Ser. No. 236,985
Int. Cl. H01m *35/04*
U.S. Cl. 136—36 25 Claims



Porous conductive supports for electrodes suitable for use in electrochemical cells are made by electroforming thin corrugated nickel foil, stacking pieces of the corrugated foil alternately with pieces of thin flat nickel foil, with the corrugations in successive corrugated pieces

oriented at different angles, bonding the adjacent pieces of foil by heating in a hydrogen atmosphere, and cutting the bonded stack in planes substantially perpendicular to the foils.

3,759,748

ELECTRICALLY RECHARGED METAL/AIR CELL

Nigel I. Palmer, Port Washington, N.Y., assignor to Leesona Corporation, Warwick, R.I.

Filed Apr. 6, 1970, Ser. No. 25,635
Int. Cl. H01m *27/00, 29/04*
U.S. Cl. 136—86 A 17 Claims

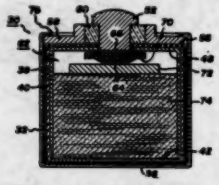
A two-electrode rechargeable metal/air or metal/oxygen depolarized electrochemical cell and method of generating electricity therefrom are described. The electrochemical cell comprises an anode capable of being regenerated, a composite cathode having an oxygen permeable hydrophobic member layered with catalyst, and a current collector in contact with the layered catalyst on said member. The cathode is constructed and arranged in order that the current collector is in removable electrical contact with the catalyst. Thus, for cell discharge, the current collector contacts the catalyst and transports electrons to the external circuit. For cell recharge, the current collector is electrically separated from the catalyst whereby numerous discharge-recharge cycles of the cell may be effected without damage to the cathode.

3,759,749

READILY MANUFACTURABLE THERMAL CELL UNIT FOR EXPLOSIVE PROJECTILES

Peter R. Voyentzie, 1476 NW. 21st Ave., Gainesville, Fla. 32601; Richard T. Ziemba, 99 S. Cove Road, Burlington, Vt. 05401; and Raymond K. Sugalski, 619 NW. 40th Terrace, Gainesville, Fla. 32601

Original application Mar. 5, 1968, Ser. No. 710,578. Divided and this application Jan. 22, 1969, Ser. No. 804,731
Int. Cl. H01m *1/00*
U.S. Cl. 136—175 4 Claims



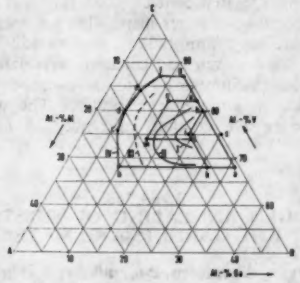
A projectile containing an explosive is provided with a fuse mechanism powered by an acceleration activated thermal cell unit which is constructed to be safely and conveniently manufactured. A terminal assembly is manufactured by positively attaching a terminal pin to a heat cup and then placing an igniting means and thermitic material therein. A separately fabricated assembly includes spaced inner and outer shells which are separated by a thermally fusible electrolyte. During fabrication the electrolyte is fused to decrease internal resistances within the cell. First and second electrode materials lie between the shells in contact with the outer and inner shells respectively.

3,759,750

SUPERCONDUCTIVE ALLOY AND METHOD FOR ITS PRODUCTION

Alfred Müller and Arno Fink, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Original application Nov. 26, 1969, Ser. No. 880,076, now Patent No. 3,679,401, dated July 25, 1972. Divided and this application Feb. 15, 1972, Ser. No. 226,614
Claims priority, application Germany, Nov. 30, 1968, P 18 11 926.1
Int. Cl. C22f *1/18*
U.S. Cl. 148—2 9 Claims



Intermetallic superconductor with composition

$$V_xGa_yAl_z$$

where $x+y+z=100$ and $68 \leq x \leq 87$; $5 \leq y \leq 31$ and

$$1 \leq z \leq 22$$

Compositions can be formed in A2 lattice, machined to desired form and converted to A15 lattice.

3,759,751

CORROSION-RESISTING WASH PRIMER COMPOSITION AND CORROSION-PROTECTED METAL SURFACE

Howard F. Smith, Palos Verdes Peninsula, Calif., assignor to Finch Paint & Chemical Company, Torrance, Calif.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,789
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.2 15 Claims

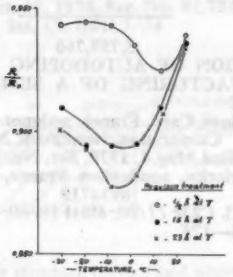
Wash primer comprising an epoxy resin, an inorganic chromate and an amino silane for depositing, particularly on aircraft surfaces, a strongly adherent corrosion inhibiting film which is insoluble in jet fuel and resists aircraft hydraulic fluids, but which is lifted by paint stripping compounds, and metal surfaces protected against corrosion by the combination of a film deposited from the wash primer adhering to the metal surface, an intermediate primer coat adhering to the film from the wash primer, and a highly cross linked solvent insoluble top coat.

3,759,752

PROCESS FOR INCREASING THE MECHANICAL RESISTANCE OF ELEMENTS MANUFACTURED IN ALLOYS OF LEAD AND ANTIMONY

José-Maria Sistiaga Aguirre, Marcelino Torralba Diaz, Juan-José Regidor Arribas, and Miguel Abalie Caride, Madrid, Spain, assignors to Patronato de Investigacion Cientifica y Tecnica "Juan de la Cierva" del Consejo Superior de Investigaciones

Filed Aug. 23, 1971, Ser. No. 174,010
Claims priority, application Spain, June 26, 1971, 392,689
Int. Cl. C21d *1/62*; C22f *1/12*
U.S. Cl. 148—3 2 Claims



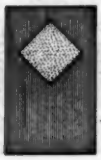
This invention is concerned with alloys of lead and antimony, and more concretely with a thermal treatment that permits the acceleration of the processes of precipitation of antimony which gives rise to the hardening of these alloys, and which consequently permits the obtaining in these alloys of elements of higher mechanical resistance, which makes them more suitable for handling in short periods of time.

3,759,753

METHOD FOR OBTAINING IMAGES ON METALS

Giuseppe Becca, Via Savona 94, and Roberto Origgi, Via Rubens 23, both of Milan, Italy

Filed June 22, 1971, Ser. No. 155,520
Claims priority, application Italy, July 20, 1970, 27,635/70
Int. Cl. C23f *7/02*
U.S. Cl. 148—6.3 6 Claims



A method for obtaining images on metal surfaces, wherein the reproduction is made on the metal surface for the image to be obtained by silk-screen printing, using a protective ink capable of withstanding a mechanical surface abrasion action and acid resistant; then modifying the condition for the remaining portion of the surface and finally removing the protective ink so that the pattern will appear by contrast between the processed and unprocessed surfaces.

3,759,754

STEEL WIRE FOR REINFORCING GLASS AND METHOD OF PRODUCTION

Kentaro Nagano and Yoshihito Saoyama, Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

No Drawing. Original application May 28, 1968, Ser. No. 732,530, now abandoned. Divided and this application July 21, 1971, Ser. No. 164,817
Claims priority, application Japan, Mar. 1, 1968, 43/12,887
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.16 4 Claims

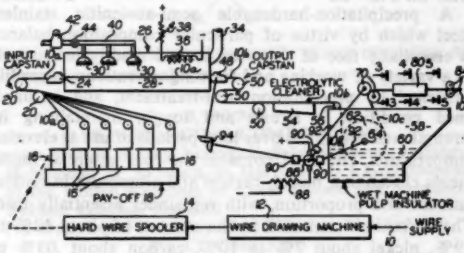
Steel wire-reinforced glass free from bubbles and cracks around the wire reinforcement embedded in the glass is produced with steel wire heated in a water vapor-containing reducing atmosphere, the dew point of which is at least 20° C., before it is embedded in the glass. The reducing atmosphere should contain at least 5 percent by volume of hydrogen gas. Preferably, this steaming treatment is combined with phosphating, chromium-treating and wire-stretching operations.

3,759,755

CONTINUOUS ANNEAL OF WIRE ON PULP INSULATING PROCESS

Edward Michael Kane, Freehold, N.J., assignor to General Cable Corporation, New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,803
Int. Cl. C22f *1/00*
U.S. Cl. 148—11.5 R 10 Claims



Spooled hard wire from a wire-drawing machine is fed from a payoff to means for applying paper pulp insulation to the wire. Between the payoff and the insulation-applying means there is an annealer through which the wire passes and in which the wire is annealed as a continuous operation with the application of the insulation. In the preferred embodiment the annealer is gas-fired and generates its own inert atmosphere. The cost and scrap of batch and electro annealing are eliminated.

3,759,756

WELD THRU PRIMER

Henry Louis Lomasney and William Joseph Lomasney, both of 11119 Prentiss Ave., New Orleans, La. 70127

No Drawing. Continuation-in-part of abandoned application Ser. No. 873,602, Nov. 3, 1969. This application Mar. 8, 1972, Ser. No. 232,980
Int. Cl. B23b *15/04*; C23c *1/12, 3/00*
U.S. Cl. 148—22 12 Claims

The present invention pertains to a novel coating system for application to carbon steel substrates. The coating provides exceptional arc behavioral properties during the metal joining by fusion or resistance welding of such substrates, via its metallurgical influence on the

weld zone. The functional elements of this coating basically comprise a carefully balanced mixture of a sacrificial or anodic metal and a metal alloy such as chromium or nickel which significantly affects the weldability and weld properties of the coating. The powdered metals or pigments are attached to the carbon steel substrates via any of a number of liquid silicate binders, the use of which is well established in the prior art. Preferred embodiments include various additional constituents, e.g. materials such as boron or magnesium to increase Rockwell hardness and susceptibility to high temperature creep. Among the unique features and advantages of the present coating is the realization of an unusual balance of functional properties, the most significant of which are the beneficial contribution to the metallurgical properties of the finished weld, while actually improving the stable electrical arc discharge normally associated with resistance welding. A further advantage of this coating concept is that it allows arrangement of selected metallic constituents within the coating in such a manner as to assure optimum silicate to silicate bonding when overcoating with a conventional inorganic zinc coating after fabrication of the structure is completed.

3,759,757

ALUMINUM-BEARING PRECIPITATION-HARDENING STAINLESS STEEL OF HIGH RETAINED TOUGHNESS

D Cameron Perry, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Sept. 23, 1966, Ser. No. 581,584

Int. Cl. C22c *39/20, 41/02*

U.S. Cl. 148—38 **14 Claims**

A precipitation-hardenable semi-austenitic stainless steel which by virtue of particular composition balance is essentially free of delta-ferrite and readily lends itself to a variety of working and forming operations, is readily hardened by precipitation heat-treatment, and in hardened condition is strong and tough, maintaining its strength and toughness over long periods of use at elevated temperature. The steel contains the four essential ingredients chromium, nickel, carbon and aluminum in critical amount and proportion, with remainder essentially iron. The chromium content is in the amount of about 12% to 19%, nickel about 7% to 10%, carbon about .03% to .05%, and aluminum about .01% to .48%. The ingredients manganese, silicon, phosphorus, sulphur and nitrogen commonly present in stainless steel are maintained in low and critical amount. Molybdenum may be added where desired.

3,759,758

HIGH STRENGTH ALUMINUM CASTING ALLOY

Ikuo Hatano, Kyuya Oida, Tatuo Abe, Seiji Kumagai, Sueo Ojima, and Hiroshi Nagaeda, Aichi, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed May 13, 1970, Ser. No. 37,000

Claims priority, application Japan, May 13, 1969, 44/37,157

Int. Cl. C22f *1/04*

U.S. Cl. 148—159 **4 Claims**

An aluminum casting alloy having good mechanical properties is prepared by adding, to aluminum, copper, magnesium, and cadmium and, additionally, if desired, titanium and boron, and, additionally, if desired, manganese and silver, solution-heat-treating thereof at a temperature higher than 500° C., and then ageing the solution-heat-treated alloy at a temperature between 160° C. and 190° C. for 4 to 48 hours. The alloy is useful in various types of machine members, aircraft, rolling-stock members, architectural members, and other structural appliances.

3,759,759

PUSH-PULL METHOD FOR SOLUTION EPITAXIAL GROWTH OF III–V COMPOUNDS

Raymond Solomon, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Original application Jan. 29, 1970, Ser. No. 6,819, now Patent No. 3,664,294. Divided and this application Mar. 20, 1972, Ser. No. 235,997

Int. Cl. H01l *7/38*

U.S. Cl. 148—171 **11 Claims**

Epitaxial layers of III–V compounds are grown on the facing surfaces of a pair of parallel, spaced-apart wafers by forcing a small quantity of a solution saturated with a III–V compound between the wafers for a selected time. Lowering the temperature of the solution precipitates the III–V compound epitaxially onto the adjacent surfaces of the wafers.

3,759,760

PREVENTION OF AUTODOPING DURING THE MANUFACTURING OF A SEMICONDUCTOR DEVICE

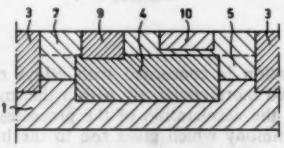
Juan Encinas, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1970, Ser. No. 34,490

Claims priority, application France, May 8, 1969, 6914719

Int. Cl. C23c *11/00;* H01l *19/00;* H02l *7/36*

U.S. Cl. 148—175 **6 Claims**



The invention relates to a method of manufacturing a semiconductor device in particular a lateral transistor with a buried layer.

3,759,761

WASHED EMITTER METHOD FOR IMPROVING PASSIVATION OF A TRANSISTOR

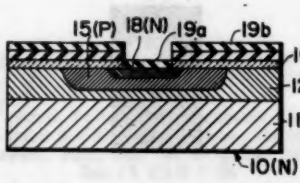
Takaaki Mori, Hachioji-shi, Hisayuki Higuchi, Kokubunji-shi, and Keijiro Uehara, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1969, Ser. No. 868,869

Claims priority, application Japan, Oct. 23, 1968, 43/76,767

Int. Cl. C23b *5/50;* C23c *13/04;* H01l *7/44*

U.S. Cl. 148—187 **22 Claims**



An improved method for fabricating a transistor based on the "washed emitter method," wherein an original silicon dioxide film, used as a mask for base diffusion, is removed from the surface of the silicon transistor body after a base region is formed by diffusion and a new insulation film which operatively acts to stabilize the surface property of the transistor body is substituted therefor.

Emitter diffusion is then provided to the surface of the base region by utilizing the new insulator film as a

mask for the emitter diffusion, and thereafter the surface of the body is washed to remove the oxide layer formed on the emitter region during the emitter diffusion.

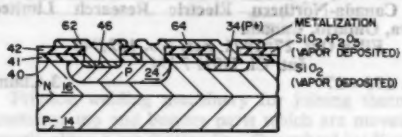
An aperture for a base contact is then formed by photoetching a part of the new insulator film. A completed transistor is obtained by providing metal contacts through the respective apertures to the respective emitter and base regions.

3,759,762

METHOD OF FORMING INTEGRATED CIRCUITS UTILIZING LOW RESISTANCE VALUES, LOW TEMPERATURE DEPOSITED OXIDES AND SHALLOW JUNCTIONS

Frank J. Barone, Tempe, and Donald L. Tolliver, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 19, 1970, Ser. No. 81,734
Int. Cl. H01l 7/34
U.S. Cl. 148—187 14 Claims



A semiconductor structure is described wherein integrally formed resistors are employed having a preferred resistance value of approximately 50 ohms per square. Additionally, processing is compatible with this low resistance value and includes low temperature deposition of passivating layers, improved cleaning and annealing cycles.

3,759,763

METHOD OF PRODUCING LOW THRESHOLD COMPLEMENTARY INSULATED GATE FIELD EFFECT DEVICES

Raymond C. Wang, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 21, 1971, Ser. No. 154,991
Int. Cl. H01l 7/50
U.S. Cl. 148—188 6 Claims

It is advantageous to have low gate threshold voltage transistors exhibiting high stability. If the surface concentration of P-type impurities of an N-type insulated gate field effect transistor (IGFET) channel between the N^+ doped source and drain is in the order of 6×10^{15} atoms per cu. cm. or less, and using a polysilicon gate electrode, the gate threshold voltages will be about one volt. Furthermore, if the complementary transistors are carefully cleaned during production thereof and a gettering step is provided, the resultant C-IGFET's have high stability. A method including the measured etching away of the surface of a P-type diffused area is disclosed for providing a region or tub of 6×10^{15} P-impurity concentration in an N-type substrate. A method is also disclosed for providing a highly stable C-IGFET using the so produced tub including cleaning and gettering.

3,759,764

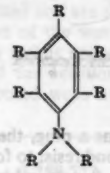
COMPOSITE PROPELLANT CONTAINING AZIRIDINYL CURING AGENT

James N. Short, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 20, 1961, Ser. No. 153,759
Int. Cl. C06d 5/06
U.S. Cl. 149—19 11 Claims

1. A castable composition curable to form a solid propellant comprising an oxidant of inorganic oxidizing salt, a binder of synthetic polymer of vinylidene-containing monomer selected from the group consisting of conjugated dienes, vinyl-substituted aromatic compounds, acrylic acid esters, alkylacrylic acid esters, nitriles, N,N-disubstituted amides, vinylfuran and N-vinylcarbazole, said polymer containing at least 1 acid group per molecule, a curative containing at least two aziridinyl groups having the formula

wherein each R is selected from the group consisting of hydrogen, alkyl, cycloalkyl, and aryl radicals and compositions thereof, the total of said R groups containing up to 20 carbon atoms, said curative being selected from the group consisting of triazines, triphosphatriazines, tri(aziridinyl)phosphine oxides, tri(aziridinyl)phosphine sulfides, and compounds containing two of said aziridinyl groups attached to a bivalent radical selected from the group consisting of carbonyl, phenyl phosphoryl, phenyl thiophosphoryl, sulfoxyl and sulfonyl, and from 0.05 to 1.0 weight percent based on said binder of a pot-life extender having the formula



wherein each R is selected from the group consisting of hydrogen and lower alkyls.

3,759,765

GAS-PRODUCING COMPOSITIONS

George Harold Sidney Young, Enfield, England, assignor to Minister of Aviation, in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

No Drawing. Filed May 23, 1961, Ser. No. 112,118
Int. Cl. C06d 5/06
U.S. Cl. 149—19.91 4 Claims

1. A process for manufacturing a gas-producing composition containing both a cyclic polymethylene-polynitramine high explosive and ammonium perchlorate, and comprising the steps of coating the said high explosive with a visco-elastic binder having a viscosity between 250,000 and 7,000,000 poises at 25° C. selected from the group consisting of polyisobutene and polypropene to form a mixture of the high explosive and binder, forming separately a mixture of ammonium perchlorate and said visco-elastic binder, and finally mixing together the two so formed mixtures in predetermined proportions together with further binder, if necessary, to form a predetermined composition.

3,759,766

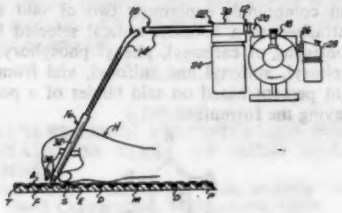
METHOD FOR PRECISION MODIFICATION OF PRELIMINARILY-ETCHED PHOTO-ENGRAVED COLOR PLATES

George Mangus, Miami, Fla., assignor to The Miami-Herald Publishing Company, Miami, Fla.

Filed Sept. 28, 1971, Ser. No. 184,549
Int. Cl. B41c 1/00; B41m 3/02
U.S. Cl. 156—14 1 Claim

A photo-engraved color plate, which has been preliminarily etched to a depth slightly less than the required final depth and with the hard first resist remaining on the raised portions of the plate, is rubbed with a dry filler powder such as powdered magnesium carbonate to fill the de-

pressions in the plate. Powder is then removed from depressions adjacent the raised lines or areas of the portions of the plate to be left unchanged by applying to such depressions the non-abrasive tip of the nozzle of a hand-held "vacuum pencil" connected to a vacuum pump by means of a flexible tube. This filler powder is not removed from depressions adjacent lines or areas of a given color plate where there is an excess of the color contributed from that plate which would cause spurious tones to be otherwise printed therefrom. A special degradable soft resin second resist is then sprayed over the entire plate, including the raised areas still covered with the hard first resist remaining after the first or preliminary etch. In the depressed portions from which the vacuum pencil has completely removed the filler powder, the second resist prevents subsequent re-etching thereof by protecting the side walls of the depressions from any further attack by the etching acid. In each depression containing the filler powder, such powder forms a plug, the top portion of which combines with the second resist to form an acid-penetrable weak crust. The plate is now subjected to the second or fine etch, the acid of which penetrates this crust to enter each depression containing such a filler powder plug. Each plug then acts to neutralize the etching acid adjacent thereto but permits the etching acid outside the plug to react most strongly against the metal of the plate forming the side and bottom walls of the depression, eating away the side wall to reduce the top areas of the raised portions or dots without undercutting these top areas. This action reduces the effect which the particular color plate will have on the color printed from that plate, hence modifies otherwise spurious tones to produce true tones in printing. Following the second or fine etch, the second or soft resist is removed by washing it out with acohol without disturbing the first or hard resist. The filler powder plugs and hard resist coating are then removed by a brushing action with a stiff-bristled brush.

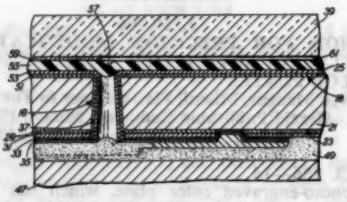


3,759,767

MASK ALIGNMENT METHODS

Donald C. Walls, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,634
Int. Cl. H01l 7/50
U.S. Cl. 156—17 9 Claims



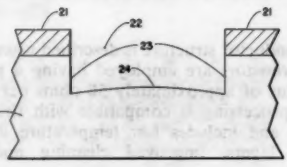
In making semiconductive devices, it is necessary to separate groups of circuit elements formed on the face of a semiconductive wafer by etching from the backside of the wafer. To do this a layer of photoresist is applied to the backside of the wafer, a separation mask is positioned on the photoresist layer and intersecting grid lines of the mask are aligned with the wafer material lying between the groups of circuit elements. The alignment is accomplished by forming a plurality of holes, preferably with a laser, partially through the wafer at alignment references on the face of the wafer. Then, a portion of the backside of the wafer is removed to join the holes to the backside. Next, the photoresist layer is formed on the backside of the wafer so that the holes remain distinguishable and the mask is positioned on the photoresist layer and aligned with the holes. The invention is particularly useful in fabricating integrated circuits having a magnetic layer formed on the inactive sides thereof.

3,759,768

PREFERENTIAL ETCHING OF SILICON

John Lawrence, Ottawa, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Oct. 27, 1971, Ser. No. 192,943
Int. Cl. H01l 7/34
U.S. Cl. 156—17 3 Claims



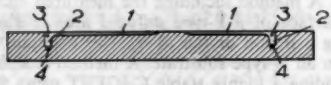
Preferential etching of silicon—typically etching of an n-type silicon material through an etch resilient material, by etching with orthophosphoric acid to which has been added arsenic trioxide. The effective range of additive is between 0.1 gm. and 20 gms. of arsenic trioxide per quart of acid.

3,759,769

METHOD OF PRODUCING PLASTIC RESIN LAWN-LIKE OBJECTS BY ENGRAVED PLATE MOLDING

Yasuhiro Oshima, % Meiwa Gravure Chemical Co., Ltd., 860 Kashida, Higashi Osaka, Osaka, Japan

Filed Dec. 28, 1970, Ser. No. 101,480
Claims priority, application Japan, Oct. 6, 1970, 45/88,006
Int. Cl. A41g 1/00; B29c 3/02
U.S. Cl. 156—61 1 Claim



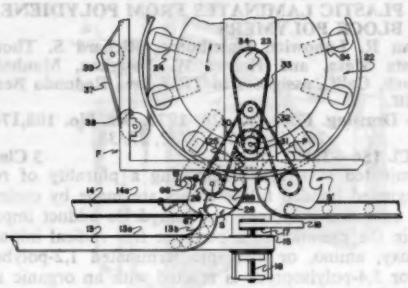
A method of easily and economically mass-producing plastic lawn-like objects exactly like natural lawn, any other grass similar thereto, or the man-created imitations thereof is described. The method involves forming molding plates respectively having a surface continuously engraved with the design of one side of natural lawn or the like. The method further involves filling a plastic resin in this engraved surface, hardening the same to mold lawn-like object constituting elements, and arranging these in a line so as to be stuck inseparably to a ground sheet thereby providing plastic lawn-like objects superior in quality to conventional ones.

3,759,770

FRICTION WELDING MACHINE LOADING AND HOLDING APPARATUS

Gaylord W. Brown and Gary A. Adams, Beaverton, Mich., assignors to Koehring Company

Filed July 6, 1971, Ser. No. 159,883
Int. Cl. B29c *27/08;* B32b *31/00*
U.S. Cl. 156—73 14 Claims



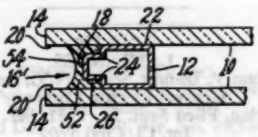
Friction welding machinery for joining thermoplastic container top and bottom parts which are moved continuously along a production line. Star wheel loading and unloading members incorporate suction pads for gripping the parts as they move to the holders where flutes, in at least some of the holders, communicate suction chambers in the holders with a vacuum source, and also hold the parts during the friction welding operation.

3,759,771

METHOD OF MAKING DOUBLE GLAZING UNIT

William R. Battersby, 14 Munroe Road, Lexington, Mass. 02173

Filed Apr. 26, 1971, Ser. No. 137,274
Int. Cl. B32b *31/30;* C03c *27/08*
U.S. Cl. 156—109 7 Claims



Method of making double glazing unit in which a spacer is disposed between two panes of glass leaving a channel between an outer face of the spacer and marginal portions of the panes, resinous material is applied in hot molten condition to seal the joints between the spacer and panes to adhere to the panes and extend from one pane to the other and the resinous material is cooled to solidify it to hold the panes strongly together in spaced, sealed relationship.

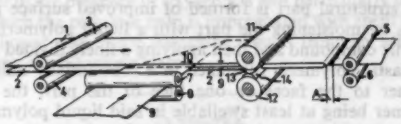
3,759,772

METHOD AND APPARATUS FOR OBTAINING TRANSVERSE MUTUAL JOINING OF SUPERIMPOSED CONTINUOUS WEBS

Lars Marten Andersson, Molnlycke, Sweden, assignor to Molnlycke AB, Goteborg, Sweden

Filed Aug. 20, 1971, Ser. No. 173,377
Claims priority, application Sweden, Aug. 21, 1970, 11,422/70
Int. Cl. B32b *31/00*
U.S. Cl. 156—270 5 Claims

The present invention relates to a method and an apparatus for obtaining transverse mutual joining of superimposed continuous webs. The method is mainly characterized in that a thermoplastic web is inserted between two superimposed continuous running webs. All the webs are then subjected to heat and pressure in an area where the actual joining is effected, the additional, thermoplastic web being inserted at a speed lower than the speed of the webs which are to be joined together. The apparatus is basically characterized by feeding means for the webs to be joined together and for the additional thermoplastic



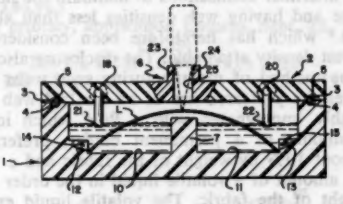
web. It is further characterized by means for applying heat and pressure on all the webs in the area where the joining is to be effected. The feeding means for the thermoplastic web have a lower speed than the feeding means for the webs to be united and are arranged, as seen in the direction of movement of the webs, in front of the heat and pressure applying means and at one side edge of the webs in order to feed the additional, thermoplastic web between the superimposed webs and at an angle to said side edge.

3,759,773

LAMINATED SHEET FOR ELECTROPHORESIS

James L. Dwyer, South Lincoln, Richard A. Paine, Bedford, and Charles W. Souza, Pinehurst, Mass., assignors to Millipore Corporation, Bedford, Mass.

Original application Mar. 27, 1967, Ser. No. 626,323, now Patent No. 3,594,263. Divided and this application Oct. 20, 1970, Ser. No. 82,386
Int. Cl. B01d *13/02;* B32b *31/12*
U.S. Cl. 156—280 4 Claims



This invention provides a laminated sheet for electrophoresis consisting of a plastic base sheet to which is bonded a microporous plastic membrane sheet consisting largely of pores which is in bonded contact with the plastic base with the pores on the outer surface open for receiving electrolyte solution and the material to be analyzed by electrophoresis. It is important that the adhesive bonding material does not enter and plug the pores. The invention provides a process for forming the laminated sheet, which comprises adhesively connecting together the base sheet and the porous plastic sheet under such control of pressure and temperature that the porosity of the sheet is not impaired.

3,759,774

PROCESS OF MAKING STRUCTURAL PARTS OF IMPROVED SURFACE PROPERTIES

Erich Bader, Hanau am Main, and Hubert Koert, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 844,670, July 24, 1969, now Patent No. 3,639,191. This application Aug. 9, 1971, Ser. No. 170,271

Claims priority, application Germany, July 25, 1968, P 17 03 887.8; Feb. 22, 1969, P 19 09 035.8

Int. Cl. B32b *31/12*

U.S. Cl. 156—284 23 Claims

A structural part is formed of improved surface properties by moistening the part with a liquid polymerizable organic compound and then applying a finely divided thermoplastic polymeric substance in a substantially uniform manner to the faces or one face of the part, the said polymer being at least swellable in said liquid polymerizable composition, and finally subjecting the part to pressure and elevated temperatures sufficient to cause curing of the polymerizable organic composition and forming of a substantially coherent polymer coating on the part.

3,759,775

NONWOVEN FIBROUS PRODUCT AND METHOD OF MAKING THE SAME

Robert C. Shepherd, Oak Lawn, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of application Ser. No. 878,246, Nov. 19, 1969, which is a continuation-in-part of application Ser. No. 570,390, July 26, 1966, both now abandoned. This application May 4, 1971, Ser. No. 140,247

Int. Cl. B32b *5/02, 5/18;* D04h *1/68*

U.S. Cl. 156—78 21 Claims

This disclosure includes descriptions of nonwoven fibrous webs including a minor amount of a binder securing the interfiber connections to maintain the fiber superstructure and having web densities less than about 0.02 gm./cm.³ which has heretofore been considered about the lowest density attainable. The disclosure also includes a unique method of manufacturing such webs and contemplates the preferred use of an air laid web of fibers thoroughly impregnated with a fluid which includes a small amount of a permanent binder, preferably less than about 10% by weight of the fabric and a very substantial amount of a volatile liquid in the order of 100% by weight of the fabric. The volatile liquid explosively puffs the fibers into a gossamer web not attainable by conventional techniques and the small amount of binder secures the fiber interconnections together to maintain the superstructure.

3,759,776

PROCESS OF FORMING UPHOLSTERY

Donald L. Decker, Newburgh, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Sept. 11, 1967, Ser. No. 666,941, now Patent No. 3,652,359. Divided and this application July 8, 1971, Ser. No. 160,940

Int. Cl. B32b *7/12;* C09j *5/04*

U.S. Cl. 156—309 6 Claims

A process for molding an article of manufacture consisting of forming a laminate composed of a stretch fabric bonded to stretchable plastic film with an adhesive system. The laminate is heated to between 270–295° F. and molded under pressure of 2 to 8 p.s.i.a. and products formed by said process.

3,759,777

PROCESS FOR PRODUCING REINFORCED PLASTIC LAMINATES FROM POLYDIENE BLOCK POLYMERS

Hyman R. Lubowitz, Hawthorne, Richard S. Thorpe, Costa Mesa, and Robert W. Vaughan, Manhattan Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,174

Int. Cl. B32b *27/32, 27/38*

U.S. Cl. 156—330 3 Claims

Laminated structures comprising a plurality of resin impregnated bonded fabric sheets are made by curing a chain extended polydiene and anhydride adduct impregnant in the presence of a peroxide free radical initiator. Hydroxy, amino, or mercapto terminated 1,2-polybutadine or 3,4-polyisoprene is reacted with an organic acid anhydride to produce a polydiene carboxylic acid terminated adduct which is chain extended and subsequently cured with a peroxide.

3,759,778

POLYURETHANE STRUCTURAL ADHESIVE

Charles E. McClung, Dayton, and David Gerald Glasgow, Centerville, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

No Drawing. Original application Mar. 24, 1969, Ser. No. 810,017, now abandoned. Divided and this application July 22, 1971, Ser. No. 165,373

Int. Cl. B32b *27/40;* C08g *22/06;* C09j *3/16*

U.S. Cl. 156—331 3 Claims

An adhesive composition comprising (a) an isocyanate-terminated prepolymer obtained by reaction of a polytetramethylene ether glycol and an unsymmetrical hindered aromatic diisocyanate, and (b) 4,4'-methylene-bis(2-chloroaniline).

3,759,779

LAMINATES

William V. Dumas, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Sept. 21, 1971, Ser. No. 182,550

Int. Cl. C09j *5/02*

U.S. Cl. 156—331 6 Claims

Laminates having good physical characteristics at room and elevated temperatures are prepared by forming a suspension of the reaction product of unsaturated bisimide and polyamine in a suitable liquid, impregnating the laminae base with the suspension and curing the lay-up to form a laminate under heat and pressure.

3,759,780

PROCESS OF SEALING JOINTS WITH SEALANT COMPOSITION

Alexander J. Rizzer, Akron, Ohio, assignor to Cities Service Company, New York, N.Y.

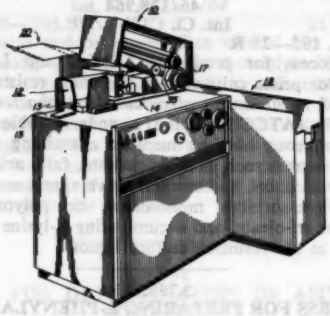
No Drawing. Original application Jan. 21, 1970, Ser. No. 4,784, now abandoned. Divided and this application July 9, 1971, Ser. No. 161,942

Int. Cl. C09j *3/12*

U.S. Cl. 156—335 1 Claim

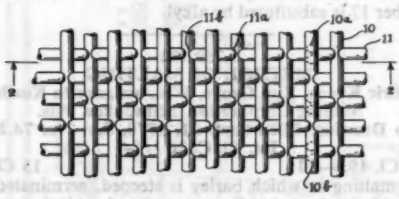
Tapes for sealing windows in automotive and architectural applications are formulated from butyl rubber, a rubber plasticizer, carbon black and a thermoplastic terpene phenol-formaldehyde Novolak resin. By virtue of the terpene phenolic resin, the sag and heat flow resistance of the formulation is considerably enhanced.

3,759,781
LABEL ACCUMULATOR FOR ADDRESSING MACHINE
John V. McGuire, Deerfield, Ill., assignor to Xerox Corporation, Stamford, Conn.
Filed May 15, 1970, Ser. No. 37,558
Int. Cl. B32b *31/04, 31/20*
U.S. Cl. 156—521 6 Claims



An addressing machine for articles for use with a continuous strip label supply, said addressing machine having a labeling head, transport means for supplying articles to the labeling head for addressing thereof, the labeling head including a label transfer wheel, means for cutting said supply strip into individual labels, means for transporting said labels from the cutting means to the label transfer wheel including an endless conveyor belt; and a label accumulator for receiving labels from said belt, said accumulator being adapted to hold a minimum supply of labels pending use by the transfer wheel to thereby avoid the need to exactly synchronize the operating speeds of the label transporting means with said transfer wheel as otherwise required to assure timely delivery to and accurate positioning of labels on the transfer wheel prior to transfer to said articles.

3,759,782
CROSSLAID FABRIC
Keith T. Bleuer, 1663 Wilshire Drive, Rochester, Minn. 55901
Filed Dec. 18, 1970, Ser. No. 99,586
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 12 Claims



A crosslaid fabric made up of warp and shute filaments in which the warp filaments have portions integrally formed therewith at least partially embracing the shute filaments and in which the shute filaments also have portions integrally formed therewith at least partially embracing the warp filaments or in which only the warp filaments or only the shute filaments have such integral portions.

3,759,783
PROCESS FOR BLEACHING CELLULOSE PULP WITH ALKALI AND OXYGEN GAS UTILIZING WASTE BLEACHING LIQUOR FROM AN ALKALINE OXYGEN GAS BLEACHING STAGE
Hans Olof Samuelson, Goteborg, and Ingemar Liss-Albin Croon, Alfredshem, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
Filed Aug. 23, 1971, Ser. No. 173,764
Claims priority, application Sweden, Aug. 25, 1970, 11,537/70
Int. Cl. D21c *9/10*
U.S. Cl. 162—40 24 Claims

A process is provided for bleaching cellulose pulp with alkali in the presence of oxygen gas and particularly of air, in which the cellulose pulp is impregnated with spent pulping liquor and waste bleaching liquor from an alkaline oxygen gas bleaching stage.

3,759,784
METHOD OF BLEACHING PULP WITH AN AQUEOUS CHLORINE SOLUTION WHILE SUPPRESSING VAPORIZATION OF LIQUID CHLORINE
Udell T. Greene, Florham Park, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio
Original application June 12, 1969, Ser. No. 832,633. Divided and this application Oct. 29, 1970, Ser. No. 85,260
Int. Cl. D21c *9/12*
U.S. Cl. 162—87 2 Claims

Method for bleaching pulp with a solution of a soluble liquefied gas in a liquid chlorine solvent while permitting at least substantially full pressure on the liquefied gas to the point of incipient solution and thereafter desirable dispersion of the liquefied gas dissolving the solvent as well as providing fast and efficient flow of the resulting solvent into a liquid processing medium. The method provides for suppressed vaporization of gas, even though such suppression occurs during an accompanying pressure drop, when the liquefied gas dissolves in the solvent, and further when the resulting solution disperses in the liquid processing medium.

3,759,785
HIGH STRENGTH NEWSPRINT
Walter G. Mihelich, Kenogami, Quebec, Canada, assignor to The Price Company Limited, Kenogami, Quebec, Canada
Continuation-in-part of application Ser. No. 860,022, Sept. 22, 1969. This application Oct. 6, 1971, Ser. No. 186,963
Claims priority, application Canada, Sept. 22, 1969, 62,706
Int. Cl. D21f *11/00;* D21h *5/12*
U.S. Cl. 162—142 11 Claims

High strength newsprint is made by calendering a newsprint paper web between a smooth hard metallic surface and a firm resilient surface so that the thickness of the paper under the applied pressure varies from point-to-point in approximate proportion to the corresponding point-to-point basis weight of the paper. The calendering is effected so that smoothing pressure is applied by passing

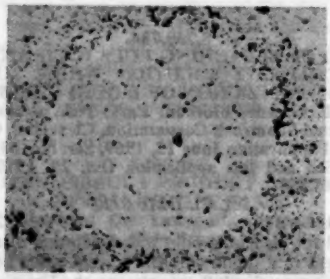
the web through at least two resilient nips, each nip comprising a hard roll and an opposing resilient roll, so that each side of said web contacts a hard roll at least once. The newsprint paper may have at least 25% of superground wood.

3,759,786

SINTERED NUCLEAR FUEL CONTAINING MOLYBDENUM COATED GADOLINIUM OXIDE MICROSPHERES

Giancarlo Abate-Daga and Ignazio Amato, Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 16, 1969, Ser. No. 885,524
Claims priority, application Italy, Feb. 25, 1969, 50,722/69
Int. Cl. C09k *3/00*; G21c *3/20*
U.S. Cl. 176—69 2 Claims



Sintered nuclear fuel, uranium dioxide in particular, containing a consumable poison of rare-earth oxide or metal boride uniformly distributed in the form of coated microspheres of 10 to 20,000 microns diameter.

3,759,787

NUCLEAR FUEL ELEMENTS

Glen E. McDonald, Strongsville, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Sept. 30, 1960, Ser. No. 60,276
Int. Cl. G21c *3/02, 3/06, 3/36*
U.S. Cl. 176—169 3 Claims

1. A method of providing a tungsten cladding for tungsten-uranium dioxide nuclear fuel plates comprising covering a tungsten-UO_2 powder compact with powdered tungsten, pressing at a pressure within the range from 5000 pounds per square inch and 10,000 pounds per square inch said tungsten covered compact, heating said pressed element to a temperature of approximately 2800° F. and finally subjecting said element to continuous successive steps of heating to a temperature of at least 3500° F. and rolling until the grains of the tungsten in the clad have an average length of 0.010 inch.

3,759,788

REDUCING BLOOD CLOTTING WITH ANTITHROMBOGENIC MATERIALS CONTAINING QUATERNARY PHOSPHONIUM SALTS

Henry Martin Gajewski, Winnetka, and Clarence John Gdowski, Buffalo Grove, Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,295
Int. Cl. C12b *3/00, 9/00*
U.S. Cl. 195—1.8 12 Claims

Reduced blood clotting is found upon the utilization of antithrombogenic materials which comprise an organic plastic having dispersed on its surface, in a pharmacologically acceptable concentration, a quaternary phosphonium salt of a strong acid which is generally insoluble in saline solution.

3,759,789

PROCESS FOR THE MICROBIAL PRODUCTION OF LYSINE AND ISOLEUCINE

Kiyoshi Watanabe, Akashi, Tutomu Tanaka, Kobe, Tamotsu Hirakawa, Kakogawa, and Mamoru Sasaki, Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,353
Claims priority, application Japan, Dec. 28, 1970, 46/128,964
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R 20 Claims

A process for producing L-lysine and L-isoleucine which comprises cultivating a threonine resistant mutant strain of *Arthrobacter alkanicus* (*Arthobacter alkanicus* No. 109) (ATCC No. 21657), under aerobic conditions in an aqueous nutrient medium containing assimilable carbon sources such as hydrocarbons, fatty acids, organic acids or alcohols, and surface active agents such as polyoxyethylene-sorbitan mono-oleate or polyoxyethylene-sorbitane tri-oleate, and accumulating L-lysine and L-isoleucine in the resultant culture liquor.

3,759,790

PROCESS FOR PREPARING L-PHENYLALANINE

Kiyoshi Nakayama, Sagamihara, and Hiroshi Hagino, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed July 16, 1971, Ser. No. 163,486
Claims priority, application Japan, July 29, 1970, 45/65,755
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 7 Claims

L-phenylalanine is produced in substantial yield by fermentation from an L-phenylalanine-producing strain of coryneform glutamic acid-producing bacteria represented by *Corynebacterium glutamicum*. Specifically mutated strains of the above noted bacteria that exhibit resistance to at least one compound selected from the group consisting of tyrosine, phenylalanine and analogues thereof and exhibit a tyrosine requirement, produce large amounts of L-phenylalanine when cultured in a suitable nutrient medium.

3,759,791

SELECTIVE MICROBIOLOGICAL PREPARATION OF ANDROST-4-ENE-3,17-DIONE

William J. Marsheck, Arlington Heights, and Stephen Kraychy, Northbrook, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 10, 1970, Ser. No. 96,990
Int. Cl. C07c *167/18*
U.S. Cl. 195—51 G 11 Claims

A process is disclosed for preparing androst-4-ene-3,17-dione by fermenting with Mycobacterium sp. N.R.R.L. B–3805 or enzymes thereof a steroid wherein carbon atom number 17 is substituted by alkyl.

3,759,792

METHOD OF MALTING

Eric Kneen, Elm Grove, Wis., assignor to Kurth Malting Corporation, Milwaukee, Wis.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,222
Int. Cl. C12c *1/04*
U.S. Cl. 195—70 13 Claims

In malting in which barley is steeped, germinated and dried by kilning, the improvement of adding a sulfite, bisulfite or metabisulfite salt or mixture thereof to the barley after steep-out and before significant kilning of the germinated grain, adding an acidic substance to the grain after at least one day of germination, and thereafter completing any remaining germination period and kilning period. The malt obtained is characterized by decreased wort pH, increased extract and wort soluble protein, and has a brighter color. The malt is equal to or better than that obtained by malt sulfuring according to conventional methods.

3,759,793

PROCESS FOR THE QUANTITATIVE DETERMINATION OF TRI-, DI- AND MONOGLYCERIDES

Harald Stork, Lampertheim, Hessen, and Felix Helmut Schmidt, Mannheim-Seckenheim, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,498
Claims priority, application Germany, Jan. 2, 1970, P 20 00 127.8
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R 11 Claims

Lipoproteins and/or protein free neutral fats present in body fluids, i.e., tri-, di- and monoglycerides, are determined completely enzymatically by using the lipase obtained from *Rhizopus arrhizus* to split the glyceride to be determined, and then in known fashion converting the resulting glyceride to pyruvate, and converting the pyruvate to lactic acid with NADH, the photometrically determined amount of NADH used up being a measure of the initial glyceride content.

3,759,794

METHOD FOR DETERMINATION OF AMYLASE ACTIVITY

Sylvan M. Sax, 6490 Monitor St., Pittsburgh, Pa. 15217; John J. Moore, 1807 Park Circle Drive, Glenshaw, Pa. 15116; and Anna B. Bridgwater, 273 S. Winebiddle St., Pittsburgh, Pa. 15224

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,667
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R 6 Claims

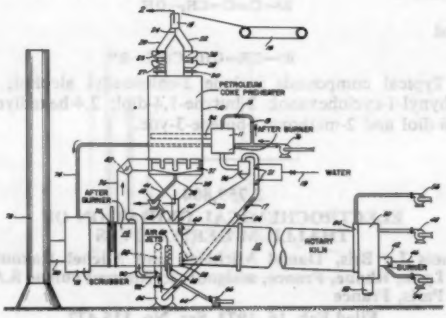
A method for the determination of amylase activity comprising the preparation of a substrate by treating amylopectin with a dichloro-s-triazine dye, buffering same, then mixing the serum, urine, or other body fluid to be tested with the substrate, providing a predetermined incubation period, then adding ethylene glycol monomethyl ether to the incubated material, followed by the addition of zinc sulfate solution, and then determining the absorbance of the reacted substrate.

3,759,795

CALCINER-PREHEATER

Robert K. Oliver, San Luis Obispo, and George L. Ford, Arroyo Grand, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed July 15, 1971, Ser. No. 163,003
Int. Cl. C10b *49/04, 53/00*
U.S. Cl. 201—25 8 Claims



A method is described for preheating coke in a calcining process to a temperature between about 600° to 1000° F., preferably to between 850° and 1000° F. This preheating avoids shattering of the coke into undesirable small particles in the calcining kiln. The hot combustion gases from the kiln are admixed with air to burn all volatile combustible material contained in the gases and a portion of the resultant hot gases is admixed with cooler gas to obtain a heating gas for the preheater having a temperature between about 800° and 1250° F. This heating gas is supplied to the preheater in sufficient volume to preheat the coke to above about 600° F., preferably above 850° F.

3,759,796

METHOD OF REPRODUCING MAGNETIZATION PATTERN

Tatsuji Kitamoto, Masashi Aonuma, and Kazuhiro Kawaziri, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,131
Claims priority, application Japan, Mar. 27, 1970, 45/25,712
Int. Cl. C04b *35/00;* C23b *7/02;* G11b *5/00*
U.S. Cl. 204—12 9 Claims

Reproduction of an original magnetization pattern by forming a magnetic film having a high magnetization resistance on a substrate tape having a magnetization pattern thereby to magnetize said film in the same pattern as that of the substrate, and stripping off said magnetic film from the substrate. The magnetic film is formed by plating or vapor deposition and can be used repeatedly as a master tape to reproduce large quantities of the magnetization pattern by such means as magnetic transfer.

3,759,797

SURFACE COATING METHOD BY ELECTROLYTIC POLYMERIZATION

Kunihiko Masunaga and Hiroshi Shinohara, Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,122
Claims priority, application Japan, Dec. 21, 1970, 45/114,918
Int. Cl. C23b *11/00*
U.S. Cl. 204—14 N 7 Claims

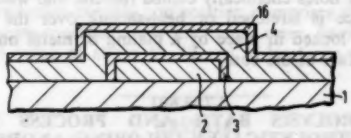
The present invention provides a method of forming an electrolytically polymerized coat of vinyl polymer on the surface of an object, with its polymerization being carried out under control by adding one or more of alcohols, quinones and mercaptans into a monomer mixture solution for electrolytic coating.

3,759,798

METHOD OF PRODUCING ELECTRICALLY INSULATED ALUMINUM CONTACTS

Hans Grafe and Hans Ullrich, Munich, Germany, assignors to Siemens Aktiengesellschaft

Filed Jan. 28, 1970, Ser. No. 6,357
Int. Cl. C23b *9/02, 5/48;* C23f *17/00*
U.S. Cl. 204—15 4 Claims



A method of producing electrically insulated aluminum contacts for planarly produced semiconductor device components comprises directly oxidizing an aluminum contact to form an insulating layer of aluminum oxide thereon.

3,759,799

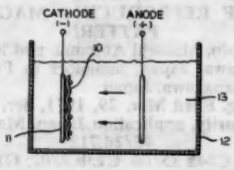
METHOD OF MAKING A METAL PRINTING SCREEN

George W. Reinke, Crystal Lake, Ill., assignor to Screen Printing Systems, Inc., Cary, Ill.

Continuation-in-part of abandoned application Ser. No. 838,601, July 12, 1969. This application Aug. 10, 1971, Ser. No. 170,529

Int. Cl. C23b 7/02, 7/00; B41c 1/14

U.S. Cl. 204—16 14 Claims



An all metal printing screen and a method of making same including the steps of mounting a metal woven wire mesh onto a metal plate, subjecting the wire mesh and plate to an electrolytic action to simultaneouly plate or coat the wire mesh and plate with a metal, and removing the coated wire mesh and plate coating as a unit from the plate to define a continuous smooth surface on one side that may be thereafter etched with a printing pattern to remove the plate coating and open the wire mesh in the printing pattern and define the resist layer. The smoothness of the resist layer and its height above the top threads are closely controlled by the electrolytic plating process.

3,759,800

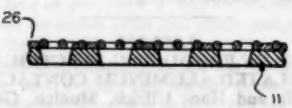
SEAMLESS ROTARY PRINTING SCREEN AND METHOD OF MAKING SAME

George W. Reinke, Crystal Lake, Ill., assignor to Screen Printing Systems, Inc., Cary, Ill.

Filed Sept. 27, 1971, Ser. No. 183,873

Int. Cl. B41c 1/14; B41l 13/00; C23b 7/00

U.S. Cl. 204—16 11 Claims



A printing screen comprised of a metal base and a taffeta woven or knit fabric face in sleeve form where the base is defined by an electro-deposited sleeve having a pattern of holes chemically etched therein, and where the fabric face is stretched or heat-shrunk over the metal base and locked in place by a plating of metal onto the outer surface of the base.

3,759,801

ELECTROLYSIS BATH AND PROCESS FOR ELECTROLYTICALLY COLORING ANODIZED ALUMINUM

Jos Patrie, 3 Chemin des Marronniers, Grenoble, France, and Michel Legrand, "Le Villard," Coublevie, France

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,225

Claims priority, application France, Nov. 26, 1970, 7042544

Int. Cl. C23f 7/00, 9/02

U.S. Cl. 204—35 N 7 Claims

An electrolysis bath for coloring previously anodized aluminum and alloys of aluminum by means of an alternating current electrolysis in an aqueous acid solution containing nickel sulphate in an amount within the range of 50 to 150 g./liter, ammonium sulphate and boric acid in an amount within the range of 45 to 60 g./liter, and at a pH within the range of 3.5 to 5.2.

3,759,802

CORROSION-RESISTANT ORNAMENTAL CHROMIUM PLATING

Gaetan de Coye de Castelet, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, Hauts de Seine, France

No Drawing. Continuation-in-part of application Ser. No. 153,828, June 16, 1971, which is a continuation of application Ser. No. 482,902, Aug. 26, 1965. This application Sept. 27, 1971, Ser. No. 184,251

Claims priority, application France, Mar. 31, 1965, 89,657

Int. Cl. C23b 5/08, 5/50

U.S. Cl. 204—41 3 Claims

Chromium plating with substantially improved resistance to corrosion and flaking is produced by first electroplating the substrate with a highly stressed nickel layer such that upon electroplating the chromium thereon micro-cracks form in the nickel and chromium layers. The micro-cracking nickel layer is deposited from a bath containing nickel chloride, an organic acid and the nickel salt thereof selected from the group consisting of gluconic, tartaric, formic, malic, lactic, citric and succinic acids. In certain applications nickel sulfamate or nickel fluoborate may be substituted for the nickel chloride.

3,759,803

ALKALINE NICKEL PLATING SOLUTIONS

Arthur H. DuRose, Richmond Heights, and Robert L. Stern, Cleveland Heights, Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

No Drawing. Continuation of abandoned application Ser. No. 752,168, Aug. 13, 1968. This application July 22, 1971, Ser. No. 165,383

Int. Cl. C23b 5/08, 5/46

U.S. Cl. 204—49 6 Claims

Addition agents for use in alkaline nickel plating baths which produce a brighter more ductile nickel electroplate. The addition agents are of the general formula:

$$R{-}C{\equiv}C{-}R^1$$

$$R^4{-}\underset{\displaystyle R^7}{\overset{}{C}}{=}\underset{\displaystyle R^8}{\overset{}{C}}{-}CH_2{-}OH$$

and

$$R^4{-}CH{=}CH{-}C{\equiv}C{-}R^{10}$$

Typical compounds include 2-chloroallyl alcohol; 1-ethynyl-1-cyclohexanol; 2-butyne-1,4-diol; 2,4-hexadiyne-1,6-diol and 2-methoxy-1-butene-3-yne.

3,759,804

ELECTROCHEMICAL OXIDATION OF THALLIUM DERIVATIVES

Louis Le Bris, Daniel Michelet, and Michel Rakoutz, Lyon, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Feb. 16, 1971, Ser. No. 115,477

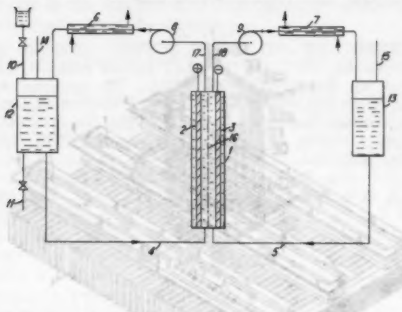
Claims priority, application France, Feb. 17, 1970, 747,548

Int. Cl. C01g 15/00; C23b 5/30, 5/46

U.S. Cl. 204—93 16 Claims

Thallous ions are oxidised electrochemically to thallic ions in a cell divided into at least two compartments by an anion exchange membrane divider, the anolyte con-

taining thallous and thallic ions and the catholyte containing an alkali metal or ammonium hydroxide or salt of



a volatile weak acid. Stainless steel, lead or copper electrodes can be used satisfactorily.

3,759,805

ELECTROLYTIC TREATMENT OF FILAMENTARY CARBON MATERIAL

Dennis R. Chapman, Duffield, and William Crawford Paterson, Darley Abbey, England, assignors to Courtaulds Limited, London, England

No Drawing. Filed Mar. 18, 1970, Ser. No. 20,822
Claims priority, application Great Britain, Mar. 19, 1969, 14,434/69
Int. Cl. C01d *7/34;* C01b *13/04;* B01k *3/01*
U.S. Cl. 204—130 5 Claims

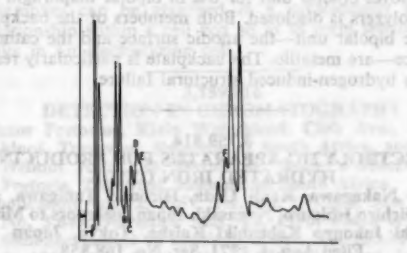
A process for treating the surface of filamentary carbon which comprises making the filamentary carbon the anode of an electrolytic cell, employing as the electrolyte an aqueous solution of a solute, for example an alkali metal hydroxide, adapted to generate oxygen at the anode during electrolysis, and electrolysing the electrolyte. The treatment may be carried out as a batch process or a continuous process.

3,759,806

PREPARATION OF PERFUMES AND SIMILAR PRODUCTS

Hyman Doctor, Staten Island, N.Y., assignor to R.D.T. International Inc., Staten Island, N.Y.

Continuation-in-part of abandoned application Ser. No. 854,830, Sept. 3, 1969. This application Sept. 9, 1970, Ser. No. 70,933
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R 5 Claims



A method of improving the lasting and other characteristics of perfumes and similar cosmetic products containing an alcoholic or similar base comprising contacting said products or components thereof with actinic light within the wave length region of 3900 to 4800 A. for a period of time reaching up to about 30 minutes, preferably from about 1 to about 30 seconds. Such contacting of the perfume or its component parts e.g., ethyl alcohol base, with actinic radiation provides for longer staying power, elimination of the flash back and alcohol odor and a general improvement of the characteristics of the perfume or similar cosmetic or toilet articles.

3,759,807

PHOTOPOLYMERIZATION PROCESS USING COMBINATION OF ORGANIC CARBONYLS AND AMINES

Claiborn Lee Osborn, Charleston, and David John Trecker, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 794,752, Jan. 28, 1969, Ser. No. 838,460, July 2, 1969, and Ser. No. 69,128, Sept. 2, 1970, all now abandoned. This application Jan. 19, 1972, Ser. No. 219,171
Int. Cl. C08d *1/00;* C08f *1/16*
U.S. Cl. 204—159.23 6 Claims

Various combinations of certain organic carbonyl photosensitizer compounds and certain organic amine activators exert an unexpected beneficial effect on the photopolymerization of certain polymerizable monomers or oligomers and coating compositions containing the same. The suitable carbonyl compounds contain a ketonic oxygen, for example one can use acetophenone or xanthone, and the amines can be primary, secondary or tertiary amines, for example, one can use butyldiethanolamine, triethanolamine, di-n-butylamine or morpholine.

3,759,808

UNSATURATED DIACRYLATES POLYMERIZED WITH ULTRAVIOLET LIGHT

Earl E. Parker, Allison Park, and Marco Wismer, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Apr. 20, 1971, Ser. No. 135,793
Int. Cl. C08f *1/18, 1/20*
U.S. Cl. 204—159.23 9 Claims

A novel method of preparing a strong non-glossy material comprises subjecting a composition comprising an ethylenically unsaturated diacrylate and a peroxide catalyst to actinic light to cure. The materials are useful as films and coatings.

3,759,809

RADIATION-CURABLE COMPOSITIONS COMPRISING AN ISOCYANATE-MODIFIED POLYFUNCTIONAL ESTER AND A PHOTOINITIATOR

Daniel J. Carlick, Northbrook, Ill., Frank Marra, Wayne, N.J., and Gerhard E. Sprenger, North Stonington, Conn., assignors to Sun Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 244,910, Apr. 17, 1972, which is a continuation-in-part of application Ser. No. 850,633, Aug. 15, 1969, both now abandoned. This application Nov. 14, 1972, Ser. No. 306,435
Int. Cl. C08d *1/00;* C08f *1/16*
U.S. Cl. 204—159.23 10 Claims

A radiation-curable composition comprises at least one isocyanate-modified polyfunctional ester having a hydroxyl value of about 15–70 and at least one photoinitiator.

3,759,810

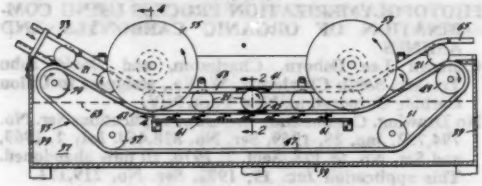
ROLL-THROUGH METHOD FOR ELECTROCOATING CAN ENDS

Le Roy Landauer and Edward Leroy Blakslee, Crystal Lake, Benjamin Ichak Abraham, Chicago, and Henry Gilbert Stieglitz, Trout Valley, Ill., assignors to American Can Company, Greenwich, Conn.

Filed Mar. 29, 1971, Ser. No. 128,972
Int. Cl. B01k *5/02;* C23b *13/00*
U.S. Cl. 204—181 6 Claims

A process and apparatus for conveying round, metal parts having raw edges through an electrocoating bath

while maintaining rolling, wiping, electrical contact between the parts and a grooved electrode rail or wheel.



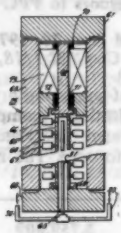
The profile of the grooved electrode is shaped to maintain the continuous rolling, wiping, electrical contact against the raw edge of the metal parts.

3,759,811

APPARATUS FOR RADIATION POLYMERIZATION

Gerald M. Platz and Daniel H. Greenberg, Champaign, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,410
Int. Cl. B01j *1/10*
U.S. Cl. 204—193 **10 Claims**



An elongated radioactive source of gamma radiation is used in initiating polymerization in a polymerization reactor. The elongated source rod is axially movable within the reactor so that its end terminates at any desired location within the reactor, thereby adjusting the effective volume within the reactor which will have polymerization processes initiated. This in turn adjusts the production rate of the reactor. A servo system is connected to drive the radioactive source rod to maintain a constant production rate. The radioactive rod may be divided into two or more parallel rods which are independently movable in order to provide any desired profile for the intensity of the radiation source.

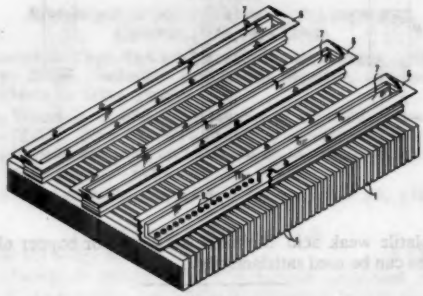
3,759,812

ANODE CONSTRUCTION FOR AMALGAM HIGH LOAD CELLS

Konrad Koziol and Baptist Zenk, Rothenbach an-der Pegnitz, Germany, assignors to C. Conradty, Nuremberg, Germany

Filed June 16, 1971, Ser. No. 153,636
Claims priority, application Germany, June 16, 1970, P 20 29 640.6
Int. Cl. B01k *1/00, 3/08*
U.S. Cl. 204—250 **6 Claims**

An anode structure, particularly for amalgam high load cells, in which the anode is made up of a plurality of graphite plates connected to current conducting rails by current conducting bolts which engage bushings in the upper edges of the graphite plates. The anode structure is receivable in a cell having a confining wall and a cell



member engages the wall and extends over the anode and beneath the current conducting rails and engages the tops of the bushings so that only the graphite plates and bushings are exposed to the interior of the cell.

3,759,813

ELECTROLYTIC CELL

Carl W. Raetzsch, William B. Darlington, and Hugh Cunningham, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 55,680, July 17, 1970, now abandoned. This application July 1, 1971, Ser. No. 158,695
Int. Cl. B01k *3/06;* C01b *11/26*
U.S. Cl. 204—256 **14 Claims**

A novel bipolar unit for use in bipolar diaphragm cell electrolyzers is disclosed. Both members of the backplate of the bipolar unit—the anodic surface and the cathodic surface—are metallic. The backplate is particularly resistant to hydrogen-induced structural failure.

3,759,814

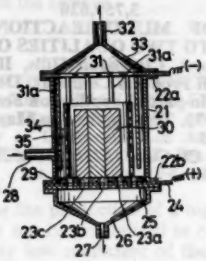
ELECTROLYTIC APPARATUS FOR PRODUCING HYDRATED IRON OXIDE

Akito Nakagawa, Kenji Ueda, Hironari Tanigawa, and Keiichiro Ishiguro, Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1971, Ser. No. 168,858
Claims priority, application Japan, Aug. 14, 1970, 45/80,720
Int. Cl. B01k *3/04*
U.S. Cl. 204—275 **4 Claims**

An electrolytic electrode device, which comprises an insoluble anode plate formed with a plurality of liquid holes and positioned in the lower part of an electrolytic cell, bar iron provided substantially vertically on said anode, cathode members located parallelly and above the

top of said bar iron, and means to insulate electrically said bar iron and cathode from each other, whereby an



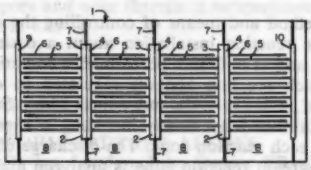
electric current is flown through the electrolytic cell while raw water is being fed thereto.

3,759,815

ELECTRODE ASSEMBLY

Karl-Georg Larsson, Sundsvall, Sweden, assignor to KemaNord AB, Stockholm, Sweden

Filed Nov. 23, 1971, Ser. No. 201,531
Claims priority, application Sweden, Nov. 26, 1970, 16,005/70
Int. Cl. B01k *3/06*; C01b *11/26*
U.S. Cl. 204—268 **5 Claims**



An electrode assembly for use in an electrolyzing cell comprising a bimetallic base plate from which parallel electrode plates extend. One metal of the bimetallic base plate and the protruding electrode plates serves as the cathode while the other metal and its protruding electrode plates serves as the anode. A number of these electrode assemblies can be arranged in a substantially parallel relationship within a cell box so as to form separate cell units in an electrolyzing cell.

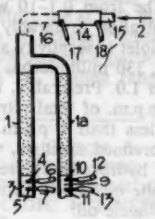
3,759,816

DETECTION IN CHROMATOGRAPHY

Victor Pretorius, Klein Waterkloof, Club Ave., Waterkloof, Transvaal, Republic of South Africa, and Hans Helmut Hahn, 38 Marais St., Bailey's Muckleneuk, Pretoria, Transvaal, Republic of South Africa

Application Aug. 2, 1967, Ser. No. 657,804, now Patent No. 3,649,498, dated Mar. 14, 1972, which is a continuation-in-part of application Ser. No. 583,788, Oct. 3, 1966, now Patent No. 3,594,294, dated July 20, 1971. Divided and this application Dec. 14, 1971, Ser. No. 207,880
Claims priority, application Republic of South Africa, Aug. 2, 1966, 66/4,568
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **13 Claims**

The progress of a chromatographic separation is monitored at any desired locality of the chromatographic system by observing at a solid detection electrode with reference to a reference electrode any detectable constitution and concentration dependent electrical quantity, e.g.



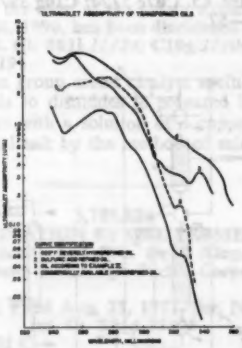
conductivity, electrolytic current capacitance, zetaphenomena or a combination of superimposed quantities.

3,759,817

BLEND COMPRISING HYDROREFINED OIL AND UNHYDROREFINED OIL

Ivor W. Mills, Media, and Glenn R. Dimeler, West Chester, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of applications Ser. No. 622,398, Mar. 11, 1967, now Patent No. 3,462,358, Ser. No. 652,026, July 10, 1967, now Patent No. 3,502,567, Ser. No. 730,999, May 22, 1968, Ser. No. 850,716, Aug. 18, 1969, now abandoned, Ser. No. 850,717, Aug. 18, 1969, now abandoned, Ser. No. 873,008, Oct. 31, 1969, and Ser. No. 22,295, Mar. 24, 1970, now Patent No. 3,681,233. This application July 22, 1971, Ser. No. 165,141
Int. Cl. H01b *3/22*
U.S. Cl. 208—14 **12 Claims**



A hydrocarbon oil, useful as an electrical insulation medium, having an impulse breakdown strength of at least 150 kv., an ASTM D–1313 test value no greater than 0.1 and which will pass at least 50 hours of the ASTM D–943 stability test, can be prepared by a process comprising blending 50–98 parts (preferably 70–95) of a severely hydrorefined naphthenic oil having a VGC from 0.820–0.899, a viscosity from 40 to 200 SUS at 100° C. and an ultraviolet absorptivity (UVA) of less than 0.04 in the 335 millimicron region with from 50–2 parts (preferably 30–5, for good D–1313 typically 10%) by weight of unhydrogenated naphthenic distillate (which preferably is free from naphthenic acids). The unhydrogenated distillate can be

a raffinate from extraction with an aromatic selective solvent (e.g. furfural, phenol). Another blended oil, having a sludge-free Doble life of up to 75 hours, can be prepared by the process of blending the unhydrogenated distillate, the hydrogenated distillate, and a cycle oil. In such blends the cycle oil can be from 0.1–10 weight percent of the blend, the concentration preferably being such that the ratio of the ultraviolet absorptivity at 335 millimicrons to the absorptivity at 330 millimicrons in the blended product is no less than 1.0. Preferably, the blended oils contain less than 25 p.p.m. of total nitrogen and less than 5 p.p.m. (typically less than 1 p.p.m.) of basic nitrogen. Blends of unhydrorefined distillate, with a paraffinic lube oil (which can be hydrorefined) are useful as textile oils or as technical white oils. Such blends can also contain a hydrorefined naphthenic oil.

3,759,818

PROCESS FOR THE PREPARATION OF SOLID UREA ADDUCTS

Jan Doelman and Hubrecht C. A. van Meurs, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 9, 1969, Ser. No. 823,485
Int. Cl. C07b *21/00*
U.S. Cl. 208—25 **2 Claims**

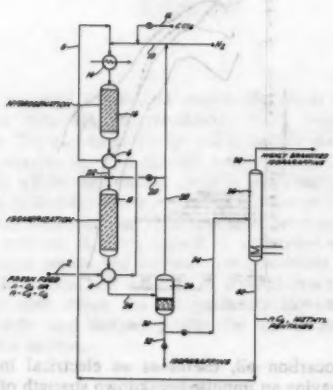
Avoiding agglomeration of urea adducts by dissolving the adductable organic compounds in a solvent containing a lower boiling adduct-forming compound and a compound that is polar or polarizable; and in a preferred operation; a compound that evaporates at adduct-forming temperatures to cool the mixture.

3,759,819

INTEGRAL HYDROGENATION-ISOMERIZATION PROCESS

Edward C. Attane, Orange, David E. Mears, Fullerton, and Cloyd P. Reeg, Orange, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed June 30, 1971, Ser. No. 158,447
Int. Cl. C07c *5/24*; C10g *39/00*
U.S. Cl. 208—57 **10 Claims**



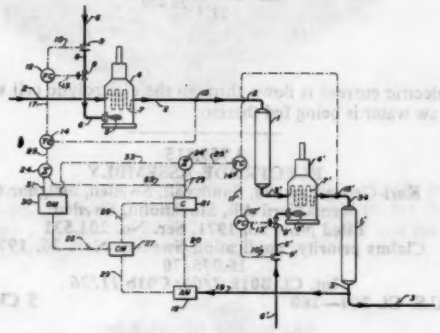
Light gasoline fractions rich in n-hexane and optionally n-pentane, and which also contain small amounts of benzene, are first subjected to hydrogenation in contact with certain zeolite-based platinum-group metal catalysts to effect saturation of the benzene content, and total effluent from the hydrogenation zone is then subjected to isomerization in contact with a platinum group metal supported on an alumina-containing base to effect isomerization of normal paraffins to iso-paraffins. The isomerization catalyst is maintained in an active state by maintaining a small proportion of hydrogen chloride in the recycle gas.

3,759,820

CONTROL OF MULTI-REACTION ZONES IN RESPONSE TO TWO QUALITIES OF PRODUCT

David M. Boyd, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 146,400, May 24, 1971. This application May 11, 1972, Ser. No. 252,379
Int. Cl. C07c *15/10*; C10g *39/00*
U.S. Cl. 208—64 **19 Claims**



The method and means of controlling the output of a multi-zone reaction installation about a desired conversion level and at optimum performance conditions. An input to each reaction zone is regulated to control the severity of reaction in the individiual zones. Such regulation is controlled by means including a regulatable set point for each reaction zone. The discharge effluent from the downstream reaction zone is analyzed and the signal responsive to the character of such effluent is used to determine a first and second quality of the effluent stream. The optimizer receives a second quality signal which has been modified by means which alters the signal sent to the optimizer by the extent that the first measured quality has deviated from a preset value. The optimizer analyzes the signal fed to it and then determines a second output signal necessary for each reaction zone to approach an optimum performance in the reaction zones. A controller utilizes the signal indicative of the first quality of the effluent and determines an output signal representing a first component of the regulatable set points. The first and second outputs signals are combined and are utilized as the regulatable set points for controlling the regulation of the severity of reaction in each reaction zone.

3,759,821

CATALYTIC PROCESS FOR UPGRADING CRACKED GASOLINES

James A. Brennan, Cherry Hill, William E. Garwood, Haddonfield, and Harold C. Myers, Woodbury, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,212
Int. Cl. C10g *35/06*
U.S. Cl. 208—93 **6 Claims**

A process is disclosed for upgrading catalytically cracked gasoline which involves fractionating a catalytically cracked gasoline into a C_8^- overhead and a C_7^+ bottom fraction and contacting the C_7^+ bottom fraction with a ZSM–5 type zeolite. The liquid product obtained from

contacting the C_7^+ bottom fraction with the ZSM–5 type zeolite is thereafter blended with the original C_6^- fraction to give a final gasoline of increased octane number. The reaction can be carried out in the absence of hydrogen and in the absence of a hydrogenation/dehydrogenation component on the zeolites.

3,759,822

COKING A FEEDSTOCK COMPRISING A PYROLYSIS TAR AND A HEAVY CRACKED OIL

Hillis O. Folkins, Claremont, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,149

Int. Cl. C10g *9/14*

U.S. Cl. 208—131 **7 Claims**

The process for the production of a high quality petroleum coke which can be graphitized to obtain a graphite having a desirably low coefficient of thermal expansion, commonly referred to as needle graphite, is described. The method comprises the coking of a blend of a thermally or catalytically cracked heavy oil having a high aromatic content as a result of the thermal or catalytic cracking with a quantity of a pyrolysis tar which is obtained as a byproduct from the high temperature, diluent cracking of petroleum distillates to produce olefins. It has been observed that a synergism exists between the pyrolysis tar and cracked heavy oil so that the pyrolysis tars can be used in much greater quantities than would be predicted from the characteristics of the cokes produced by the coking of the individual components. In a typical embodiment, a blend comprising from 20 to 60 percent of pyrolysis tar and 40 to 80 percent of a decant oil from catalytic cracking is thermally coked by heating to a temperature from 850° to about 1000° F. and passing the heated stock to a drum and permitting the stock to crack to form vapors and coke therein at temperatures of from 830° to about 875° F.

3,759,823

HYDROCARBON CONVERSION WITH PLATINUM-SECOND-METAL CATALYSTS IN PROPORTIONS WHICH FORM ORDERED ALLOYS

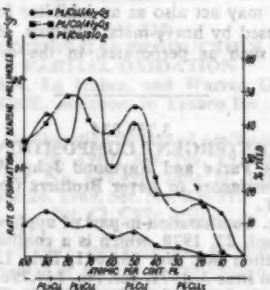
Evan Ellis Davies, London, John Stanley Elkins, Cheam, and Robert Chalmers Pitkethly, Camberley, England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 30, 1971, Ser. No. 129,439

Claims priority, application Great Britain, Apr. 13, 1970, 17,361/70; July 3, 1970, 32,368/70

Int. Cl. C10g *35/08*

U.S. Cl. 208—138 **5 Claims**



A hydrocarbon conversion catalyst of 0.01–10% wt. metal on a refractory support contains platinum and a second metal which forms a solid solution with Pt, the atomic amounts of each being equivalent to amounts forming ordered alloy structures. The second metal may be Co, Ni, Fe, Cu, Sn, Pd (particularly these six), Ir, Rh, Ag, Au, Bi, Hg, Sb, Pd or Cd and preferably there is at least 45 atomic percent Pt. The catalysts may be prepared by known impregnation or ion-exchange techniques and are preferably reduced before use at 250–600° C.

The preferred use is dehydrocyclisation or dehydrogenation of C_3–C_{25} hydrocarbons, particularly the catalytic reforming of 15–204° C. boiling range petroleum fractions.

3,759,824

METHOD FOR DETERMINING DECREASE IN HYDROGENATION-DEHYDROGENATION ACTIVITY AND ACIDIC ACTIVITY OF REFORMING CATALYST

Marvin F. L. Johnson, Homewood, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,152

Int. Cl. C10g *35/06*

U.S. Cl. 208—139 **20 Claims**

A method for monitoring the hydrogenation-dehydrogenation and/or acidic activities of a catalyst comprising platinum and alumina is disclosed. The catalyst is used to promote the conversion, e.g., reforming, of hydrocarbon feedstock into hydrocarbon effluent. The effluent can then be analyzed for toluene and methylcyclohexane (MCH), and n-hexane, 2,2-dimethylbutane, n-heptane and 3,3-dimethylpentane. Selected ratios of these six components characterize the state of the activity of the catalyst.

3,759,825

METHOD OF PREPARING A CALCINED COPPER-IRON SUPPORTED CATALYST AND PROCESS UTILIZING THE CATALYST

Sun W. Chun, Murrysville, Harry A. Hamilton, Natrona Heights, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 15, 1971, Ser. No. 163,055

The portion of the term of the patent subsequent to June 26, 1990, has been disclaimed

Int. Cl. B01j *11/24*; C10g *27/04*

U.S. Cl. 208—191 **10 Claims**

A copper-iron group metal catalyst useful for the conversion of thiols to disulfides is prepared by co-impregnating a support with a solution of a copper salt and an iron group metal salt by the method of minimum excess solution.

3,759,826

FRACTIONATION BY GEL PERMEATION

Vincent F. Felicetta and Ellis Gray King, Bellingham, Wash., assignors to Georgia-Pacific Corporation, Portland, Oreg.

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,184

Int. Cl. B01d *15/08*

U.S. Cl. 210—31 C **13 Claims**

A process for the fractionation and recovery of water-soluble compounds by gel permeation using a water-insoluble, polymerized lignosulfonate resin.

3,759,827

LUBRICANT COMPOSITIONS

Eugene D. Groenhof, Midland, and Terence J. Swihart, Essexville, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 29, 1970, Ser. No. 76,631

Int. Cl. C10m *3/24, 3/46, 7/50*

U.S. Cl. 252—29 **10 Claims**

Diesters of 1,4,5,6,7,7-hexachlorobicyclo(2.2.1)-hept-5-ene-2,3-dicarboxylic acid are lubricant additives for improving the performance of silicone oil and grease.

3,759,828
SOLUBLE OIL COMPOSITIONS
Henry R. Harrison, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.
Filed July 12, 1971, Ser. No. 161,681
Int. Cl. C10m *1/08, 1/32, 1/40*
U.S. Cl. 252—33.4 9 Claims

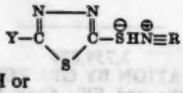
Bactericide containing soluble oil compositions are disclosed as well as oil-in-water emulsions of said soluble oil compositions, wherein the emulsions exhibit bacteria inhibiting properties.

3,759,829
FUNCTIONAL FLUID COMPOSITIONS
James D. Sullivan, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 796,885, Feb. 5, 1969, now Patent No. 3,591,500, which is a continuation-in-part of abandoned application Ser. No. 540,488, Apr. 6, 1966. This application June 23, 1971, Ser. No. 156,133
Int. Cl. C10m *1/32, 1/38*
U.S. Cl. 252—47.5 10 Claims

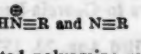
Functional fluid compositions comprising polyphenyl thioethers, mixed polyphenyl oxy-thioethers and mixtures thereof containing certain pyrimidines as anti-corrosive agents have improved metal compatibility and are particularly useful as aircraft engine lubricants and hydraulic fluids.

3,759,830
METHOD OF PREPARING REACTION PRODUCTS OF HYDRAZINES, CARBON DISULFIDE AND ACYLATED NITROGEN COMPOSITIONS
Paul W. Vogel, Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Continuation of abandoned application Ser. No. 871,071, Aug. 25, 1969, which is a division of application Ser. No. 731,363, May 17, 1968, now Patent No. 3,519,564, which in turn is a continuation-in-part of abandoned application Ser. No. 663,208, Aug. 25, 1967. This application Oct. 26, 1971, Ser. No. 192,319
Int. Cl. C10m *1/20, 1/36, 1/38*
U.S. Cl. 252—51.5 A 9 Claims

Hydrazine (or substituted hydrazines) and carbon disulfide react with acylated polyamines (wherein the acylating agent is a carboxylic compound, preferably a succinic compound, containing at least about 20 carbon atoms) to produce compositions useful as corrosion and rust inhibitors for lubricants. The compositions contain heterocyclic compounds of the formula



wherein Y is —SH or



and N≡R is the acylated polyamine residue.

3,759,831
MIXTURES OF SECONDARY C_9 TO C_9 TRIALKYL PHENOLS AS ANTIOXIDANTS
Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation
No Drawing. Application Oct. 17, 1969, Ser. No. 867,369, now Patent No. 3,609,081, which is a continuation-in-part of application Ser. No. 710,784, Mar. 6, 1968, which is a continuation-in-part of application Ser. No. 556,577, June 19, 1966, which in turn is a continuation-in-part of application Ser. No. 510,395, Nov. 29, 1965, all now abandoned. Divided and this application Sept. 17, 1971, Ser. No. 181,642
Int. Cl. C10m *1/20*
U.S. Cl. 252—52 R 1 Claim

Organic compositions are provided containing secondary C_6 to C_9 trialkyl phenols, or their mixtures, as antioxidants for preventing oxidative deterioration of metal surfaces.

3,759,832
FERRITE MATERIAL
Boris Nikolaevich Ermakov, ulitsa Leni Golikova 10, kv. 39, and Viktor Georgievich Kurilenko, nab. r. Fontanki 18, kv. 6, both of Leningrad, U.S.S.R.
No Drawing. Continuation-in-part of abandoned application Ser. No. 748,907, July 31, 1968. This application July 16, 1971, Ser. No. 163,478
Int. Cl. C04b *35/28*
U.S. Cl. 252—62.63 3 Claims

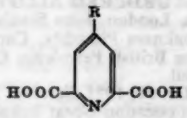
Ferrite materials having for their basic components ferric oxide and nickel oxide. The ferrite material (ferrite) also includes cobalt oxide and lead oxide, which makes it possible to extend the operational frequency range of the material up to 400M c.p.s. The ferrite has the following composition, by mol. percent:

Ferric oxide	38–48
Lead oxide	0.5–3.0
Cobalt oxide	0.7–2.0
Nickel oxide	50.0–60.8

Articles are made from the herein disclosed nickel ferrite including cobalt oxide and lead oxide additives in accordance with the known ceramic industry technology.

3,759,833
DETERGENT COMPOSITIONS
Donald Bannerman James Easton, Oftersheim-Baden-Wurttenburg, Germany, and George Kerr Rennie and Christopher Charles Storer, Wirral, England, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Dec. 29, 1971, Ser. No. 213,819
Claims priority, application Great Britain, Jan. 11, 1971, 422/71; Aug. 11, 1971, 37,639/71
Int. Cl. C11d *7/54*
U.S. Cl. 252—95 5 Claims

A detergent composition incorporates from 1 to 60% by weight of a water-soluble or water-dispersible salt of a heterocyclic dicarboxylic acid having the general formula:



wherein R can be hydrogen or a substituent such as bromine, chlorine, hydroxy, carboxy, C_{1-4} alkyl, amino or alkyl-substituted amino. The salt acts as a detergency builder, and may act also as an inhibitor for the decomposition, caused by heavy-metal catalysis, of any peroxy-compounds such as perborates, in the detergent composition.

3,759,834
DETERGENT COMPOSITION
John Pedlow Parke and Raymond John Wilde, Wirral, England, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 74,241, Sept. 21, 1970, which is a continuation-in-part of application Ser. No. 705,021, Feb. 13, 1968. This application June 3, 1971, Ser. No. 149,796
Claims priority, application Great Britain, Feb. 17, 1967, 7,712/67
Int. Cl. C11d *3/065, 9/30, 17/06*
U.S. Cl. 252—110 6 Claims

A translucent, non-brittle detergent flake having improved properties contains from 70 to 95 percent by weight of an alkali-metal C_8–C_{22}, preferably C_{14} to C_{16}, alpha-olefin sulphonate and from 5 to 11 percent by

weight of water. The flake can optionally contain minor amounts of other non-soap detergent active agents, soaps, and detergency builders, particularly trisodium nitrilotriacetate.

3,759,835
PROCESS FOR PRODUCING RARE EARTH OXIDE PHOSPHORS
Emil J. Mehalchick, Towanda, Pa., assignor to GTE Sylvania Incorporated
No Drawing. Filed Mar. 22, 1971, Ser. No. 126,957
Int. Cl. C09k *1/10*
U.S. Cl. 252—301.4 R 11 Claims

A process for producing rare-earth oxide phosphors is disclosed wherein specified amounts of yttrium oxide, gadolinium, or mixtures thereof are blended with europium oxide and a heat decomposable borate source and heated to a certain temperature for a predetermined length of time. The material is then reblended with a specified amount of a heat decomposable lithium source and heated to a certain temperature for a predetermined length of time.

3,759,836
PREPARATION OF SULFUR SLURRIES FOR PIPELINE TRANSPORTATION
Leland F. Collins, Moraga, Robert C. Quinn, Oakland, and Paul G. Wilhelmsen, Alamo, Calif., assignors to Shell Oil Company, Houston, Tex.
No Drawing. Filed Sept. 15, 1971, Ser. No. 180,918
Int. Cl. B01f *17/00*
U.S. Cl. 252—309 2 Claims

An improved method of making concentrated sulfur slurries particularly designed for pipeline transportation.

The present invention relates to a new and novel method of making a highly concentrated sulfur slurry for pipeline transportation in which the sulfur is essentially in particles of 10–1000 microns and is present in a liquid carrier; said slurry being resistant to agglomeration, phase separation, sticking, plating, etc., but is rather stable, readily pumpable even on restart after pipeline shutdown without the necessity of using complicated means of restart due to normal tendencies of such a slurry to plug pipelines particularly on shutdown. This is accomplished in accordance with the present invention by adding to a liquid carrier, into which molten sulfur is injected, a small amount of particular classes of surfactants which are soluble in the liquid carrier and are capable of forming sulfur particles and which inhibit interparticle dendrite formation of the sulfur into highly viscous agglomerate which tend to form clusters and deposit on contacting surfaces thereby causing plugging, clogging, etc.

3,759,837
SYNTHESIS GAS PRODUCTION BY PARTIAL OXIDATION
Roger M. Dille, La Habra, and Warren G. Schlinger, Pasadena, Calif., assignors to Texaco Inc., New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 664,312, Aug. 30, 1967, Ser. No. 692,306, Dec. 21, 1967, and Ser. No. 649,490, June 28, 1967. This application June 26, 1969, Ser. No. 836,977
Int. Cl. C07c *1/02*
U.S. Cl. 252—373 15 Claims

In a high pressure synthesis gas generating process, continuous control of the pH in the system may be accomplished by determining the nitrogen in the primary hydrocarbon fuel and oxygen-enriched gas fed to the generator, supplementing said nitrogen with a controlled amount of nitrogen in the form of nitrogen containing compounds, synthesizing ammonia in the system, and continuously neutralizing all or a portion of the formic acid produced in the system with the ammonia synthesized in the system and with additions of supplemental ammonia from an external source. Carbon-steel process equipment and piping is thereby protected from corrosion and system upsetting emulsions are prevented from forming in the carbon recovery zone.

3,759,838
RHODIUM HALIDE COMPLEX CATALYST COMPOSITIONS
Kenneth C. Dewhirst, San Pablo, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 705,582, Nov. 30, 1967, now Patent No. 3,639,439, which is a division of application Ser. No. 417,482, Dec. 10, 1964, now Patent No. 3,489,786. This application June 11, 1971, Ser. No. 152,391
Int. Cl. C07c *11/26;* C07d *103/00*
U.S. Cl. 252—429 R 16 Claims

An improved homogeneous hydrogenation catalyst composition comprises rhodium halide complexes incorporating stabilizing phosphine or arsine ligands, and excess ligand.

3,759,839
PROCESS FOR THE MANUFACTURE OF A PALLADIUM CATALYST
Hans Fernholz, Fischbach, Taunus, Hans-Joachim Schmidt, Frankfurt am Main, and Friedrich Wunder, Florsheim am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Continuation of abandoned application Ser. No. 777,898, Nov. 21, 1968. This application Feb. 22, 1971, Ser. No. 117,694
Claims priority, application Germany, Dec. 2, 1967, F 54,191
Int. Cl. B01j *11/12*
U.S. Cl. 252—431 C 12 Claims

A carrier catalyst containing palladium carboxylate which is suitable for the alkenylation of carboxylic acids with olefins in the gaseous phase is manufactured by impregnating the carrier with a solution containing a palladium carboxylate, drying the impregnated carrier at temperatures below 120° C. and evaporating the solvent to a residual content of less than 20% by weight.

3,759,840
CATALYST FOR HYDROCARBON OXIDATION
Robert S. Barker, Little Ferry, N.J., assignor to Halcom International, Inc.
No Drawing. Filed Sept. 28, 1970, Ser. No. 76,249
Int. Cl. B01j *11/82*
U.S. Cl. 252—432 4 Claims

A catalyst useful for the oxidation of organic compounds, particularly the partial oxidation of benzene with molecular oxygen to produce maleic anhydride, comprises the oxides of molybdenum and vanadium and a minor amount of boron. A preferred form of the catalyst further includes phosphorus and at least one member of the group consisting of cobalt, nickel and iron, and sodium.

3,759,841
METHOD OF MANUFACTURING A SUPPORTED CATALYST CONTAINING PLATINUM GROUP METAL, RHENIUM OR GROUP IV–A METAL
Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed May 10, 1971, Ser. No. 142,029
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 10 Claims

A method of catalyst manufacture. A platinum group metal compound in common solution with a group IV–A metal and/or rhenium compound is impregnated on a carrier material. The common solution further contains a

weak acid which acts as a buffer to maintain the solution at a pH of less than about 3.5 in contact with the carrier material.

3,759,842
ACTIVATED GRAPHITE
Giuseppe Bianchi and Antonio E. Nidola, Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy
Filed Jan. 26, 1971, Ser. No. 109,781
Claims priority, application Italy, Nov. 24, 1970, 32,119/70, Patent 909,429
Int. Cl. B01j 11/06
U.S. Cl. 252—447 8 Claims

Graphite impregnated with at least one valve metal oxide such as molybdenum oxide alone or optionally co-deposited with an oxide of a metal of the eighth group of the periodic table which is useful in an amalgam denuder and a process for the preparation and use of the said impregnated graphite.

3,759,843
NICKEL CATALYSTS
Ebo Jan Holscher, Vlaardingen, Netherlands, and Theo Jan Osinga, Cleves, Germany, assignors to N.V. Internationale Octrooi Maatschappij "Octropa," Rotterdam, Netherlands
No Drawing. Filed Dec. 17, 1971, Ser. No. 209,436
Claims priority, application Great Britain, Dec. 21, 1970, 60,499/70
Int. Cl. B01j 11/22, 11/32
U.S. Cl. 252—459 5 Claims

A process for preparing a supported nickel catalyst is described in which precipitation of the nickel on the support occurs by mixing an aqueous solution of a nickel salt, an aqueous alkali metal carbonate and the support to form a suspension which during the whole of the precipitation is between 75° C. and 95° C., is at a pH between 8.0 and 10 and has an alkalinity between 0.010 N and 0.2 N.

3,759,844
CATALYST FOR CATALYTIC CRACKING OF HYDROCARBONS
Goro Yamaguchi, 1554 Tsuda-machi, Kodaira-shi, Tokyo, Japan; and Susumu Komatsu, 1099 Uraimbe, Bizencho, Wake-gun; and Tetsuo Fukumoto, 783 Uraimbe, Bizen-cho, Wake-gun, both of Okayama-ken, Japan
No Drawing. Filed Mar. 29, 1971, Ser. No. 129,177
Claims priority, application Japan, Oct. 2, 1970, 45/85,908
Int. Cl. B01j 11/12, 11/22
U.S. Cl. 252—465 1 Claim

A catalyst or catalyst carrier for side reactions of catalytic cracking of hydrocarbons essentially consisting of an alkali polyaluminate selected from the group consisting of β-alumina ($R_2O \cdot 11Al_2O_3$), β'-alumina ($R_2O \cdot 7\text{-}8Al_2O_3$), and β''-alumina ($R_2O \cdot 5\text{-}6Al_2O_3$) wherein R is Na or K, respectively, and a catalyst or a catalyst carrier of a mixture for side reactions of catalytic cracking of hydrocarbons which essentially consists of at least 1% by weight of said alkali polyaluminate and a refractory inorganic material.

3,759,845
CATALYST FOR PREPARING 1,4-BUTANEDIOL
Stanley Rudoff, Elizabeth, and Waldo R. De Thomas, Parsippany, N.J., assignors to GAF Corporation, New York, N.Y.
No Drawing. Filed Sept. 16, 1970, Ser. No. 72,870
Int. Cl. B01j 11/22
U.S. Cl. 252—466 J 5 Claims

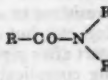
An improved hydrogenation catalyst is provided comprising a high surface area amorphous or gamma alumina support carrying thereon from about 12 to about 20% by weight of nickel, about 1 to about 10% by weight of copper and from 0 to about 15% by weight of manganese.

3,759,846
DETERGENT COMPOSITION
Derek John MacDonald Robb, Bromborough, and John Raymond Samuel, Port Sunlight, England, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Mar. 3, 1971, Ser. No. 120,745
Claims priority, application Great Britain, Mar. 16, 1970, 12,501/70
Int. Cl. C11d 3/066
U.S. Cl. 252—527 2 Claims

A fabric-washing detergent powder having superior fabric-softening properties, imparted by the presence in the composition of a water-insoluble soap in a very finely-divided form, is disclosed. A process for the manufacture of the composition, in which the water-insoluble soap is formed in situ in a slurry in the presence of a dispersing agent prior to spray-drying, is also disclosed.

3,759,847
CLEANING COMPOSITIONS
Jean Martineau, 5 Rue des Arenes, Limoges, France, and Francois Joseph Biechler, 366 Ter rue de Vaugirard, Paris, France
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,523
Claims priority, application France, Mar. 17, 1970, 7009513
Int. Cl. C11d 3/26
U.S. Cl. 252—544 1 Claim

A cleaning composition containing as an active ingredient, at least one fatty acid amide, in a free or complexed state of the formula:



in which R is a straight or branched aliphatic chain having at least 8 carbon atoms, R_1 and R_2 identical or different are chosen from hydrogen, alkyl, hydroxyalkyl and oxyhydroxyalkyl radicals.

3,759,848
PROCESS FOR THE PRODUCTION OF PRESSURE RESISTANT, HIGHLY HEAT RESISTANT FOAM PLASTICS MADE FROM MIXTURES OF A BITUMINOUS MASS AND A NOVOLAK
Jaafar Omran, Castrop-Rauxel, Heinz-Gerhard Franck, Duisburg-Meiderich, and Maximilian Zander, Castrop-Rauxel, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany
No Drawing. Filed Jan. 14, 1972, Ser. No. 217,962
Claims priority, application Germany, Jan. 18, 1971, P 21 02 118.1-43
Int. Cl. C08g 22/24
U.S. Cl. 260—2.5 F 22 Claims

An improved process for the production of a pressure resistant and highly heat resistant foam plastic by simultaneously foaming and hardening a reaction mixture of a bituminous mass with a novolak, said foaming accomplished by means of gas liberated during said hardening process or by means of an added expanding agent, the improvement comprising simultaneously foaming and hardening a mixture of said bituminous mass with a modified novolak comprising the reaction product of a phenol, carbazol and formaldehyde. The foamed plastics are useful where pressure resistance and high heat resistance are required.

3,759,849

CROSS-LINKED ACRYLIC FIBERS OR FILMS PREPARED BY COPOLYMERIZING ACRYLONITRILE, UNSATURATED MONOMER CONTAINING HALOGENATED s-TRIAZINYL GROUPS, AND PROTEIN

Akira Yamamoto, Kunio Nakaoji, Kunio Oohara, Zenjiro Momiyama, Heiichiro Murakami, and Akira Tomita, Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha

Original application Aug. 19, 1968, Ser. No. 753,515. Divided and this application July 26, 1971, Ser. No. 166,313

Claims priority, application Japan, Sept. 2, 1967, 42/56,502; Dec. 22, 1967, 42/82,509

Int. Cl. C08f *15/40*; C08h *7/00*

U.S. Cl. 260—8 4 Claims

Cross-linked acrylic fibers or films which are of improved hot water-resistance and have a silky hand or feel, are obtained by (i) preparing an acidic solution of a copolymer obtained by copolymerizing in an acidic medium (a) a vinyl monomeric material consisting mainly of acrylonitrile and (b) a polymerizable unsaturated monomer having a halogenated s-triazinyl group or halogenated pyrimidinyl group in the presence of (c) a polymerizable unsaturated monomer having a group containing active hydrogen, a group capable of forming active hydrogen, a pyridyl group, a pyrazinyl group or quinolyl group, and/or (d) protein, and then (ii) extruding a very stable acidic solution of the resulting polymer into the form of fibers or films, and then heat-treating. The obtained fibers, for example, are useful in making woven or knitted fabrics of correspondingly superior properties.

3,759,850

LACQUER EMULSION COMPOSITION FOR LITHOGRAPHIC PLATES

Donald Gregory Lehman, Rahway, N.J., assignor to Inmont Corporation, New York, N.Y.

No Drawing. Filed May 14, 1971, Ser. No. 146,579

Int. Cl. C08d *9/06*; C08f *45/18*; G03f *7/02*

U.S. Cl. 260—17.4 ST 3 Claims

A lacquer emulsion composition for lithographic plates which has the following preferred composition by weight:

14° Baumé aqueous gum arabic solution	50.00
Ethylene glycol	5.00
Phosphoric acid 85%	4.00
Fumed silica (Cab-O-Sil)	1.00
Water	9.90
Tween 60 surfactant	0.10
Cyclohexanone	25.35
Carbon black	1.49
Bakelite VYHH vinyl resin	3.16
	100.00

Also, the method of preparing the composition, and the method of preparing exposed lithographic plates for printing comprising applying the above composition to the exposed plate.

3,759,851

FLAME-RESISTANT TEXTILE FABRICS

Wolfgang Carl and Martin Wandel, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 776,773, Nov. 18, 1968. This application Aug. 2, 1971, Ser. No. 168,471

Claims priority, application Germany, Aug. 5, 1968, P 17 69 913.7

Int. Cl. C08f *29/20*

U.S. Cl. 260—17.4 9 Claims

A flame-resistant textile article comprising filaments, staple fibers or yarns from natural and/or synthetic material and a homogeneous mixture consisting of a halogen phosphoric acid esters, a phosphorus-containing plasticizing agent, a polyalkyl halide, antimony oxide, and a polyurethane.

3,759,852

PROTECTIVE COATINGS CONTAINING GLASS FLAKE PIGMENT AND ARTICLES COATED THEREWITH

William J. Bradley, 245 Upper Toyon Drive, Kentfield, Calif. 94904

No Drawing. Application Mar. 3, 1967, Ser. No. 620,651, which is a continuation-in-part of application Ser. No. 348,304, Feb. 21, 1964, both now abandoned. Divided and this application Oct. 30, 1969, Ser. No. 872,772

Int. Cl. C08f *45/04*; C08g *51/04*; C09c *3/02*

U.S. Cl. 260—18 EP 27 Claims

A pigment for use in organic resin coating compositions which is leafing glass flakes. Protective coating and paint compositions containing the leafing glass flakes and organic resin binder vehicles such as epoxy resin binder vehicles form a glass veneer on a substrate. After the coating composition is applied to a substrate, the glass flakes migrate toward and leaf at the outer surface of the coating forming laminar layers adjacent the surface of the coating. The coatings and paint compositions can be applied as by spraying in a single step to numerous stubstrates to form relatively thin coatings ranging, for example, from 1 to 10 mils in thickness. The coating is bonded to the surface of an article to form an impermeable glass veneer.

3,759,853

OIL-MODIFIED ALKYD COMPOSITIONS

Robert L. Formaini, Montvale, N.J., and Young D. Kim, Severn, Md., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 760,661, Sept. 18, 1968, which is a continuation-in-part of application Ser. No. 454,991, May 11, 1965, both now abandoned. This application June 26, 1969, Ser. No. 836,933

Int. Cl. C09d *3/52*, *3/66*

U.S. Cl. 260—21 3 Claims

An alkyd composition produced by reacting a polycarboxylic acid, a polyhydric alcohol, a tris - 2 - hydroxyalkyl isocyanurate wherein the 2-hydroxyalkyl group contains between two and four carbon atoms, with an oily modifier selected from the group consisting of vegetable oils, marine oils, and fatty acids derived from vegetable oils, marine oils, and fatty acids derived from vegetable oils or marine oils. The resulting reaction product is then blended with an amino resin.

3,759,854

POLYESTER POWDER COATING COMPOSITIONS

Wen-Hsuan Chang and Rostyslaw Dowbenko, Gibsonia, and Joseph M. Makhlouf, Mars, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Jan. 27, 1972, Ser. No. 221,406

Int. Cl. C09d *3/52*, *3/66*

U.S. Cl. 260—21 10 Claims

Powder coatings can be formulated from thermosetting polyester resins and a crosslinking agent, such as a condensation product of aldehydes with melamine, urea, or benzoguanamine. Such powder compositions when applied by fluidized bed, electrostatic fluidized bed or electrostatic spray provide for coatings that have particularly good exterior weatherability, good electrical insulation properties, even at high temperature, and good resistance to abrasion.

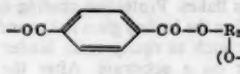
3,759,855

POLYESTERS HAVING IMPROVED STRETCHABILITY AND DYEABILITY PROPERTIES

Robert Schnegg, Herbert Pelousek, and Robert Dippelhofer, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,481
Claims priority, application Germany, Apr. 22, 1970, P 20 19 429.0
Int. Cl. C08g 17/16
U.S. Cl. 260—22 R 5 Claims

Improved stretchability and dyeability properties are shown by novel terephthalic acid polyesters having melt viscosities of from 500 to 20,000 poises at 280° C., and comprising recurring alkylene diol terephthalate units, and of 0.02 to 12 mol percent of units containing polyol radicals that are partially esterified with fatty acids, and corresponding to the general formula



in which R_2 represents a linear or branched aliphatic or hydroaromatic radical having a functionality of $2+n$, R_3 represents hydrogen or a C_1–C_{19} alkyl radical, and n represents an integer from 1 to 6.

3,759,856

METAL HALIDE AND POLYGLYCERAL CARBOXYLIC ACID ESTER STABILIZERS FOR VINYL CHLORIDE POLYMERS

Philip H. Rhodes and Robert L. Ahr, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed May 30, 1972, Ser. No. 258,059
Int. Cl. C08f 45/56, 45/58
U.S. Cl. 260—23 XA 11 Claims

Liquid stabilizer compositions are provided which are useful with vinyl halide resins to impart improved antistatic and antifogging properties in addition to stabilizing the resins against the deleterious effects of oxygen, heat and light. The stabilizer solutions are obtained by mixing a Group II metal halide with a polyglycerol partial ester.

3,759,857

CROSS LINKING OF ACRYLAMIDE POLYMERS

William J. I. Bracke, Brussels, Belgium, assignor to Labofina S.A.

No Drawing. Filed June 18, 1971, Ser. No. 154,607
Claims priority, application Great Britain, June 23, 1970, 30,444/70
Int. Cl. C08f 3/90, 45/24
U.S. Cl. 260—29.6 H 12 Claims

A process for the cross-linking of polymers of acrylamide comprising treating an aqueous solution of said polymers at a temperature of from 0° C. to 100° C. with an aqueous solution of a salt selected from the group consisting of the hypochlorite and hypobromite salts of alkali metals and alkaline-earth metals.

3,759,858

ACID-MODIFIED POLY(VINYL ACETATE-VINYL PROPIONATE) TEXTILE

Albert E. Corey, East Longmeadow, and Donald D. Donermeyer, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,441
Int. Cl. C08f 15/40, 45/44
U.S. Cl. 260—29.6 TA 10 Claims

Disclosed herein are acid-modified poly(vinyl acetate-vinyl propionate) textile sizes and textiles sized therewith.

3,759,859

EMULSION COPOLYMERIZATION

Paul J. Steinwand, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 884,030, Dec. 10, 1969. This application July 19, 1971, Ser. No. 163,997
Int. Cl. C08f 1/13, 15/40
U.S. Cl. 260—29.7 T 9 Claims

Latex compositions suitable for use as adhesives and for application in carpet manufacturing are described wherein a rubbery copolymer of a conjugated aliphatic diolefin, an unsaturated comonomer and a minor amount of an ethylenically unsaturated carboxylic acid are copolymerized in an emulsion polymerization using a combination of surfactants found to be highly effective in the emulsification of comonomers and the resultant latex. Specifically disclosed is a combination of an ester of an alkali metal sulfoalkanedionic acid and a block polymer of polyoxypropylene and polyoxyethylene having a low to moderate content of polyoxyethylene units.

3,759,860

COATING COMPOSITIONS AND COATED ARTICLES

Charles R. Peaker, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Original application Aug. 13, 1969, Ser. No. 849,876. Divided and this application June 19, 1972, Ser. No. 264,108
Int. Cl. C08d 7/10; C08f 45/56, 45/60
U.S. Cl. 260—29.7 SQ 14 Claims

Coating compositions for textiles, which compositions comprise a stabilized latex containing an alkyl sulfone terminated oligomeric emulsifier.

3,759,861

POLYMER COMPLEX OF A CARBOXY-CONTAINING POLYMER AND A NONIONIC CATIONIC OR AMPHOTERIC SURFACE ACTIVE AGENT

Wataru Shimokawa, 1–1–1–303 Sakurajosui, Tokyo, Japan

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,715
Claims priority, application Japan, Dec. 20, 1969, 44/102,779; Apr. 10, 1970, 45/30,645
Int. Cl. C08f 45/24, 45/42
U.S. Cl. 260—31.4 R 21 Claims

A polymer complex obtained by reacting a vinyl polymer having carboxyl groups and at least one nonionic, cationic or amphoteric surface active agent. The complex is water-soluble and useful as a sizing agent for the paper industry. It is also useful as a fluocculant or a heat-sensitive or pressure-sensitive adhesive.

3,759,862

LUBRICATING OIL COMPOSITION

Yukimasa Fukui, 4–3 Umaokoshi 1-chome; Tsunehiro Kotani, 30–3 Maedacho; and Toshitsugu Ozeki, 2273–1 Ikuwacho, all of Yokkaichishi, Japan

No Drawing. Filed May 16, 1972, Ser. No. 253,728
Claims priority, application Japan, Sept. 30, 1971, 46/76,645
Int. Cl. C10m 1/26
U.S. Cl. 252—32.7 E 7 Claims

Lubricating oil composition which maintains a proper viscosity at higher temperatures and also a sufficiently low viscosity suitable for good starting property of engines, at low temperatures, can be obtained by blending a complex-ester or complex-esters of 3-hydroxy-2,2-dimethylpropyl 2,2-dimethylhydracrylate (which can be also called hydroxypivalyl hydroxyprivalate) with one or more kinds of straight or branched chain saturated fatty acids having 4–18 carbon atoms, with a solvent-refined petroleum lubricating oil.

3,759,863

PROCESS FOR THE MANUFACTURE OF IMPACT RESISTANT THERMOPLASTIC MOULDING MATERIALS

Arno Czekay, 13 Dr. Krauss-Strasse, Knapsack, near Cologne, Germany; Bruno Kramer, 79 Bergstrasse, Hurth, near Cologne, Germany; and Hans Weiden, 67 Friedenstrasse, Frechen, near Cologne, Germany

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,507

Claims priority, application Germany, Jan. 7, 1970, P 20 00 468.6

Int. Cl. C08f *45/28*

U.S. Cl. 260—33.6 AQ 6 Claims

Production of impact-resistant thermoplastic moulding compositions. Between 90 and 97 weight percent of a mixture of 40 to 95 weight percent polyvinyl chloride and 5 to 60 weight percent terpolymer based on acrylonitrile-butadiene-styrene and their derivatives, are intimately blended with 1 to 4 weight percent dialkyl-tin mercaptide stabiliser and 2 to 6 weight percent lubricant, which essentially contains hydrocarbons with at least 16 C atoms; and the resulting blend is made into a moulding composition. The terpolymer used is produced by polymerizing butadiene, in a first step, with a vinyl compound in aqueous emulsion, in contact with 0.1 to 1 weight percent customary catalyst and at most 0.2 weight percent emulsifier, based on the amount of diene and vinyl compounds used, at a temperature of between −20° C. and +100° C., to give an elastomeric copolymer; reacting the said copolymer, in a second step, with a vinyl monomer, such as styrene, α-methylstyrene or mixtures of these compounds with acrylonitrile or methacrylonitrile, in aqueous emulsion, to give a graft polymer; and blending the graft polymer in a third step with a copolymer based on the second step vinyl compounds to form the final copolymer.

3,759,864

COATING COMPOSITIONS

Peter Francis Nicks, Maidenhead, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 15, 1971, Ser. No. 189,789

Int. Cl. C08g *51/04, 51/28*

U.S. Cl. 260—33.6 EP 11 Claims

Pigmented solid particles of film-forming polymer, suitable for use in powder coating compositions, are prepared by volatilising the volatile liquid continuous phase of a pigmented dispersion of film-forming polymer. The polymer is dispersed by emulsification in volatile liquid in the presence of a defined polymeric agent. Volatilisation is preferably effected by spray drying.

3,759,865

PROCESS FOR THE PRODUCTION OF POLYCARBONATE SOLUTIONS

Gerhard Emmer, Hugo Vernaleken, Kurt Weirauch, and Hermann Schnell, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1971, Ser. No. 110,733

Claims priority, application Germany, Feb. 2, 1970, P 20 04 517.4

Int. Cl. C08g *51/30*

U.S. Cl. 260—33.8 R 13 Claims

A process for the production of a solution of a high molecular weight polycarbonate suitable for the production of filaments and films which comprises forming a solid solution of a polycarbonate with a molecular weight in excess of 30,000 by removing the solvent from a solution of the polycarbonate in a solvent at a temperature below its melting point under shear stressing, and redissolving the solid solution.

3,759,866

SOLVENT EPOXY RESIN COMPOSITION AND AN ELECTRICAL MEMBER IMPREGNATED THEREWITH

Don A. Rogers, Jr., Pittsburgh, and James D. B. Smith, Turtle Creek, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1971, Ser. No. 189,382

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP 4 Claims

A resinous composition, suitable as a solventless impregnating resin for large rotating apparatus insulation, is made from a mixture containing about 85 to 115 parts of a bisphenol A or novolac glycidyl ether epoxy resin, about 100 to 155 parts of an acid anhydride and about 25 to 95 parts of a diglycidyl ether of neopentyl glycol.

3,759,867

MOLDING COMPOSITIONS CONTAINING SILANOL-FREE RESINS

Duane F. Merrill, Ballston Spa, and Richard C. Cooke, Jr., Elnora, N.Y., assignors to General Electric Company

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,402

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 GB 29 Claims

A silicone molding composition having improved thermal shock resistance having as its main ingredients a silicone resin of a high silanol content, that is, a silanol content of 3 to 11% by weight of the resin, and a low silanol content resin having less than .5 weight percent of silanol groups and preferably being substantially silanol-free. The molding composition is prepared by mixing the low content silanol resin with a filler and then adding to the mixture a pigment, catalyst system, a process aid and a release agent. To this resulting mixture there is then added the high silanol content binder resin and additional filler, such as glass fibers. The resulting mixture is extruded to a sheet which is then ground into fine particles, the fine particles being an uncured molding resin composition.

3,759,868

CARBOXYNITROSO-POLYBUTADIENE VULCANIZATE

Robert A. Meyers, Encino, and Eugene A. Burns, Palos Verdes Peninsula, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,269

Int. Cl. C08d *9/08*; C08f *45/04*

U.S. Cl. 260—41.5 R 10 Claims

A decrease in permeability and an increase in resistance of carboxynitroso rubbers can be effected by the addition of small amounts of polybutadiene resins. Liquid functionally terminated polybutadiene is mixed into a terpolymer containing trifluoronitrosomethane, tetrafluoroethylene, and a small amount of nitrosoperfluorobutyric acid. The mixture is cured in the presence of a peroxide free radical initiator.

3,759,869

SILANE SUBSTITUTED POLYDIENES

Irving Skeist, Summit, and Jerry Miron, Livingston, N.J., Murray Steinfink, Monsey, N.Y., Manilal Savla, Parsippany, and Joseph Robles, Newark, N.J., and Pradip Bhatt, Northborough, Mass., assignors to Skeist Laboratories, Inc., Livingston, N.J.

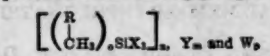
No Drawing. Filed Sept. 14, 1971, Ser. No. 181,611

Int. Cl. C08d *9/10*

U.S. Cl. 260—41.5 R 13 Claims

A polymeric composition which can be used to enhance the strength of bonding in filled and reinforced polymer products, as well as enhance the bonding strength of con-

ventional adhesives is disclosed. The polymeric composition is comprised of the following groups:



where W is an end group and p is at least 2, Y_m is a divalent radical which may be alkylene, alkenylene and arylalkylene, X is a halogen, an alkoxy radical or an acyloxy radical, R is an alkylidene radical which may be substituted. o is zero or an integer from 2–5, and n and m are chosen so that the molecular weight is at least about 500 to about 50,000 so long as n is never less than 1.

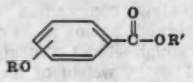
3,759,870

POLYESTER BASED ON HYDROXYBENZOIC ACIDS

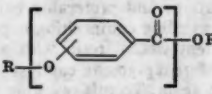
James Economy, Eggertsville, and Bernard E. Nowak, Lancaster, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 619,577, Mar. 1, 1967. This application Aug. 24, 1970, Ser. No. 66,566
Int. Cl. C08g 17/00, 17/02
U.S. Cl. 260—47 C 26 Claims

Polyesters based on hydroxybenzoic acids may be produced by condensing, in a liquid state at an elevated temperature, a monomer having the formula



to form a linear polyester having the formula



wherein the bracketed portion represents the recurring structural unit; the oxy function of the polyester and the RO group of the monomer are para or meta to the carboxylic group; R is hydrogen, acetyl, propionyl or benzoyl; and R′ is phenyl or substituted phenyl.

3,759,871

POLYETHERPOLYTHIOLS, METHOD OF PREPARATION AND MIXTURES OF POLYTHIOETHER-POLYTHIOLS WITH EPOXIDE RESINS

Richard A. Hickner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Oct. 29, 1968, Ser. No. 771,648, now abandoned. Divided and this application Aug. 12, 1971. Ser. No. 171,331
Int. Cl. C08g 30/10
U.S. Cl. 260—47 EC 20 Claims

Polythioetherpolythiols with a thiol functionality greater than 2 are made by reacting a polythiol with a triene, a tetraene or mixtures thereof or mixtures of the polyenes with a diene, in the presence of a free radical generating catalyst. The polythioetherpolythiols can be reacted with epoxide resins to effect cures of the latter.

3,759,872

PROCESS FOR THE PRODUCTION OF EPOXIDE POLYADDUCTS WITH PHOSPHINE OXIDE ACCELERATORS

Joachim Lorenz, Bensheim-Auerbach, Germany, assignor to Ciba-Geigy Marienberg GmbH, Lautern, Odenwald, Germany

No Drawing. Filed Feb. 1, 1972, Ser. No. 222,695
Claims priority, application Germany, Feb. 3, 1971, P 21 04 910.5
Int. Cl. C08g 30/14
U.S. Cl. 260—47 EC 1 Claim

Process for the production of epoxide polyadducts by the reaction of epoxide compounds with compounds giving polyadducts of epoxide compounds, whereby the reaction is carried out in the presence of a phosphine oxide as a reaction accelerator in an amount of 0.1 to 10 parts by weight to 100 parts by weight of the epoxide compound.

3,759,873

WATER-DISPERSIBLE POLYURETHANES BASED ON POLYESTERS PREPARED FROM CARBOXY POLYOLS

Stephen F. Hudak, Minneapolis, Minn., assignor to Ashland Oil, Inc., Columbus, Ohio

No Drawing. Continuation of abandoned application Ser. No. 716,349, Mar. 27, 1968. This application May 20, 1971, Ser. No. 145,502
Int. Cl. C08g 22/10, 22/16, 51/22
U.S. Cl. 260—75 NK 11 Claims

Polyester resins containing urethane linkages, comprising:

(A) The reaction product of (1) a polyester prepared from at least one polycarboxylic acid and at least one polyhydric alcohol substantially free or unsaturated reactants and naturally occurring oils, and (2) an organic polyisocyanate; the ratio of (1) and (2) being such that equivalents of hydroxyl/equivalents of (carboxyl+isocyanate) is greater than 1 and up to 0.5 to 2.0 and the ratio of equivalents of carboxyl/equivalents of isocyanate is greater than 1 and up to about 30; or

(B) The reaction product of (1) a polyester prepared from at least one alpha, beta-ethylenically unsaturated polycarboxylic acid and at least one polyhydric alcohol, and (2) an organic polyisocyanate; the ratio of (1) to (2) being such that the ratio of equivalents of hydroxyl/equivalents of (carboxyl+isocyanate) is 0.5 to 2.0 and the ratio of equivalents of carboxyl/equivalents of isocyanate is greater than 1 and up to about 30.

Film forming compositions made by blending the saturated resin (A), which may be water dispersible, with 5% to 50% of an aminoplast resin in water or organic solvent, or with a free isocyanate containing prepolymer or adduct, or by blending the unsaturated resin (B) with an ethylenically unsaturated monomer and effecting addition polymerization.

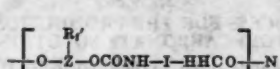
3,759,874

FLUORINATED POLYURETHANES AS SOIL RELEASE AGENTS

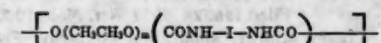
John T. Gresham, Skillman, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,325
Int. Cl. C08g 22/16
U.S. Cl. 260—77.5 AP 6 Claims

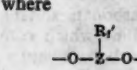
Fluorinated polyurethanes are described having a chemical structure made up of the units



and



in the ratio of from at least 2 to about 24 fluorinated units to one nonfluorinated unit containing repeating oxyethylene groups, where



is a residue of a fluorinated diol of the formula

$$R_fC_nH_{2n-a}(OH)_aXR'(OH)_b$$

in which R_f is a perfluoroalkyl group of 4–16 carbon atoms, X=O or S, R' is an organic radical of 2–15 carbon atoms which may contain one or more ether linkages and n=1–11, a=1 or 0, b=1 or 2, $a+b$=2, and I is a divalent organic group from a diisocyanate,

$$I(NCO)_2$$

m is an integer from about 8 to over 100. The polyurethanes are effective soil release agents for durable press fabrics.

3,759,875

CURABLE LIQUID PIGMENT COMPOSITION AND METHOD

James L. Guthrie, Ashton, Md., assignor to W. R. Grace & Co.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,608

Int. Cl. C08g *39/00*

U.S. Cl. 260—76 2 Claims

The invention disclosed is for a method of preparing a new curable liquid pigment composition which includes a pigment component, a polyester-polyene component having at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain of the molecule, and a polythiol component containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule of the polythiol. Upon curing by a free radical generator such as actinic radiation, the curable liquid composition rapidly forms substantially odorless, solid elastomeric films which effectively color and coat a substrate.

3,759,876

LACTAM POLYMERIZATION WITH AMIDE INITIATORS

Markus Matzner, Edison, Walter T. Reichle, Millington, and Sui-Wu Chow and James E. McGrath, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 26,128, Apr. 6, 1970. This application Sept. 24, 1971, Ser. No. 183,700

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L 6 Claims

Certain amide compounds based on aromatic amines are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide polymerization systems which may be utilized in a variety of molding operations.

3,759,877

SHRINKABLE FILM FORMING COPOLYAMIDES PREPARED BY COPOLYMERIZING ω-AMINOUNDECANOIC ACID AND THE SALT OF A DICARBOXYLIC ACID AND TRIMETHYLHEXAMETHYLENE DIAMINE

Helmut Huhn and Lutz Hoppe, Walsrode, Germany, assignors to Wolff & Co. Aktiengesellschaft, Walsrode, Germany

No Drawing. Continuation-in-part of application Ser. No. 88,123, Nov. 9, 1970, now Patent No. 3,692,748, which is a continuation of abandoned application Ser. No. 823,939, May 12, 1969. This application Feb. 24, 1972, Ser. No. 229,185

Claims priority, application Germany, May 14, 1968, P 17 70 406.2

The portion of the term of the patent subsequent to Sept. 19, 1989, has been disclaimed

Int. Cl. C08g *20/04*

U.S. Cl. 260—78 A 2 Claims

Shrinkable film-forming copolyamides which are glass-clear in appearance and which are obtained by polycondensation of 65–85% by weight of ω-amino-undecanoic acid and 35–15% by weight of a salt of a dicarboxylic acid and a diamine, between 50 and 100 mol percent of the diamine being trimethylhexamethylene diamine, and films produced therefrom.

3,759,878

POLYMERS MODIFIED WITH SULFONAZIDE-ISOCYANATE COMPOUNDS

David S. Breslow, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Original application Sept. 22, 1969, Ser. No. 860,018, now Patent No. 3,657,047. Divided and this application Sept. 29, 1971, Ser. No. 184,956

Int. Cl. C08f *27/06, 27/10*

U.S. Cl. 260—78.4 E 6 Claims

Disclosed are sulfonazide-isocyanate compounds of the formula

$$\left(N_3O_2S\right)_x-R-\left(NCO\right)_y$$

where R is a polyvalent aliphatic radical and x and y are integers from 1 to 100. The use of said sulfonazide-isocyanate compounds to modify polymers, cross-link polymers, and adhere polymers to substrates selected from siliceous materials, metals and other polymer substrates is disclosed. Also disclosed are rubber tires reinforced with polyester tire cord which has been modified with a sulfonazide-isocyanate compound.

3,759,879

CONTINUOUS BULK POLYMERIZATION PROCESS FOR VINYL CHLORIDE COPOLYMERS

John C. Floros, Lunenburg, Mass., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 28, 1971, Ser. No. 147,907

Int. Cl. C08f *1/06*

U.S. Cl. 260—78.5 CL 8 Claims

A continuous, homogeneous bulk polymerization process for producing copolymers, terpolymers, and tetrapolymers of vinyl chloride and lower alkyl esters of maleic or fumaric acids, which polymers contain a minimum amount of residual unreacted monomer, in a specific temperature-time cycle in at least two reaction zones in the presence of known catalysts and modifiers under substantially anhydrous conditions. The polymer formed must be soluble in the monomer at all times throughout the polymerization reaction.

3,759,880

MANUFACTURE OF INSOLUBLE AND ONLY SLIGHTLY SWELLABLE POLY - N - VINYL-PYRROLIDONE-2

Ernst Hoffmann and Karl Herrle, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,436

Int. Cl. C08f *1/66*

U.S. Cl. 260—80.3 R 4 Claims

Manufacture of poly-N-vinylpyrrolidone-2 by polymerization of vinyl pyrrolidone in the presence of unsaturated cyclic acid amides and an oxidizable metal.

3,759,881

POLYACRYLATE CASTING PROCESS

Charles B. Holder, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,174

Int. Cl. C08f *3/64, 3/66, 15/16*

U.S. Cl. 260—86.1 E 14 Claims

Polyacrylate castings are prepared by first forming a viscous prepolymer by intimately admixing an acrylic acid

ester with an amine initiator, such as morpholine, and then, in a second step, completing the polymerization in a mold thus forming a clear polyacrylate casting.

3,759,882

PROCESS FOR PREPARING RANDOM HIGH CIS-SBR

Walter Nudenberg, West Caldwell, and Edward A. Delaney, Dover, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed June 22, 1971, Ser. No. 155,619

Int. Cl. C08d *1/22, 1/44, 3/04*

U.S. Cl. 260—84.1 **6 Claims**

A process for preparing a rubbery copolymer of butadiene and styrene wherein at least 50% of the butadiene units are in the cis-1,4 configuration and which contains from 10 to 45% by weight of bound styrene, the bound styrene having random distribution, which comprises polymerizing monomeric butadiene and monomeric styrene in solution in an inert organic solvent with an iodine-containing catalyst formed in situ in the solution by separately introducing an organomagnesium compound, a titanium tetrahalide and elemental oxygen, the amount of oxygen being equal to from 12 to 35 mol percent per mol of titanium present.

3,759,883

COLD FLOW RESISTANT HOMOGENEOUS COPOLYMERS OF TETRAFLUOROETHYLENE AND CHLOROTRIFLUOROETHYLENE AND PROCESS FOR PREPARING THEM

Max B. Mueller, Morristown, Peter P. Salatiello, Morris Plains, and Herman S. Kaufman, Teaneck Township, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,157

Int. Cl. C08f *15/06*

U.S. Cl. 260—87.5 A **4 Claims**

Granular copolymers of tetrafluoroethylene and between about 0.05 mol percent and about 0.50 mol percent of chlorotrifluoroethylene have superior physical properties and are adapted for molding into objects having enhanced resistance to cold flow under load.

3,759,884

PROCESS FOR THE POLYMERIZATION OR COPOLYMERIZATION OF ETHYLENE WITH THE USE OF A CATALYST SUPPORTED BY A CARRIER

Tadaichi Tokuzumi, Otake-shi, Hiroshima-ken, Hiroshi Fujimura, Yamaguchi-ken, and Norio Kashiwa, Hiroshima-ken, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,901

Claims priority, application Japan, Sept. 11, 1968, 43/64,936

Int. Cl. C08f *1/56, 3/06*

U.S. Cl. 260—88.2 R **18 Claims**

In the process for the polymerization or copolymerization of ethylene in an inert solvent in the presence of a catalyst comprising a titanium or vanadium halogen compound chemically bonded onto the surface of inorganic solid particles, and an organoaluminum compound or a dialkyl zinc, the improvement wherein the inorganic solid particles are particles of magnesium hydroxide having an average particle diameter exceeding 1μ but not greater than 70μ, and a specific surface area in the range of from 20 to 100 m.^{2}/g.

3,759,885

VINYL CHLORIDE POLYMERS AND METHODS OF PREPARING THEM

Jean Claude Thomas and Francis Fournel, Lyon, and Salomon Soussan, Saint-Fons, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Continuation of abandoned applications Ser. No. 648,965 and Ser. No. 649,014, both June 26, 1967. This application Sept. 16, 1970, Ser. No. 72,864

Claims priority, application France, June 28, 1966, 67,215, 67,216

Int. Cl. C08f *3/22*

U.S. Cl. 260—92.8 R **9 Claims**

The polymerization in mass of vinyl chloride, alone or in combination with compatible monomers, is carried out in two distinct stages separated in time or in time and space, with sharp differences in temperature and intensity of agitation, producing superior polymers.

3,759,886

BIODEGRADABLE EMULSIFIERS FOR POLYCHLOROPRENE

Nathan L. Turner, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed May 17, 1971, Ser. No. 144,226

Int. Cl. C08f *1/13, 3/32*

U.S. Cl. 260—92.3 **5 Claims**

Use of octyl sulfate salts as emulsifying agents in chloroprene polymerization. Octyl sulfate salts are biodegradable and replace the nonbiodegradable salts of the condensation product of naphthalene sulfonic acids and formaldehyde.

3,759,887

PROCESS FOR THE PREPARATION OF POLYMERS OR COPOLYMERS

Hendrik J. Rang and Sjoerd Kaarsemaker, Sittard, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

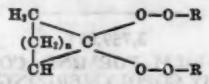
No Drawing. Filed July 7, 1964, Ser. No. 380,934

Claims priority, application Netherlands, July 8, 1963, 295,066

Int. Cl. C08f *1/60, 3/04*

U.S. Cl. 260—94.9 R **10 Claims**

Ethylene polymers are prepared by polymerizing ethylene at temperatures above 150° C. and pressures above 500 atmospheres with an organic peroxide of the formula



where R is tertiary alkyl and *n* is an integer from 2 to 5, or with 2,2-bis[4,4-di(tertiary butylperoxy)cyclohexyl] propane.

3,759,888

PROCESS FOR THE PREPARATION OF CHLORINATED POLYETHYLENE, AND COMPOSITIONS THEREOF

Shinji Nose, Amagasaki, Hideaki Tsujimura, Ikeda, Katumi Iio, Ibaraki, Hitoshi Ishihara, Amagasaki, and Hiroshi Yoshimoto, Ibaraki, Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Filed Nov. 10, 1970, Ser. No. 88,339

Int. Cl. C08f *29/04*

U.S. Cl. 260—94.9 H **8 Claims**

An improved process of making chlorinated polyethylenes, which comprises the steps of:

(a) first stage chlorination of polyethylene powder, under introduction of chlorine, at a temperature not

exceeding the upper critical melting temperature (T) or the fluctuated upper critical melting temperature (T_a) of crystalline portion of the polyethylene,

(b) heat-treatment of the first-stage-chlorinated polyethylene at a temperature (T_b) exceeding the lower critical melting temperature of crystalline portion of said chlorinated polyethylene and the temperature at which the first stage chlorination is performed, following the interruption of chlorine introduction, and

(c) further chlorination of the heat-treated, chlorinated polyethylene until the desired chlorine content is obtained, under resumption of chlorine introduction at a temperature (T_c) below the above temperature (T_b).

3,759,889

ETHYLENE POLYMERIZATION IN THE PRESENCE OF COMPLEX NICKEL CATALYSTS CONTAINING A GLYCOLIC ACID, THIOGLYCOLIC, OR THIOLACTIC ACID LIGAND

Ronald Bauer, Orinda, and Harold Chung and Wilhelm Keim, Berkeley, Calif., and Henry Van Zwet, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Original application Jan. 15, 1970, Ser. No. 3,199, now Patent No. 3,661,803. Divided and this application Sept. 16, 1971, Ser. No. 181,264

Int. Cl. C08f *1/74, 3/06*

U.S. Cl. 260—94.9 C **12 Claims**

Ethylene is polymerized in the presence of a catalyst which is the reaction product of a nickel compound with a ligand selected from the group consisting of glycolic acid, thioglycolic acid and thiolactic acid. The nickel compounds comprise olefinically unsaturated compounds of from 2 to 20 carbon atoms. The preferred nickel compound is biscyclooctadiene-1,5-nickel.

3,759,890

IMIDAZOLYL DERIVATIVES OF PROTEINS AND POLYSACCHARIDES

Donald Victor Wilson, Needingworth, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Aug. 31, 1971, Ser. No. 176,755

Claims priority, application Great Britain, Sept. 17, 1970, 44,510/70

Int. Cl. C07g *7/00;* C08h *1/00*

U.S. Cl. 260—112 R **20 Claims**

Imidazolyl derivatives of polypeptides, proteins, amino-containing polysaccharides and polymers containing at least one primary aliphatic amino group are described. These derivatives are converted into corresponding diazonium compounds which are employed in coupling reactions to produce products useful in immunochemistry.

3,759,891

(1-β-ALANINE, 15-ORNITHINE)-CORTICOTROPIN PEPTIDES

Hideo Otsuka, Mino, and Ken Inouye, Kobe, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed Mar. 22, 1971, Ser. No. 127,000

Claims priority, application Japan, Mar. 24, 1970, 45/2,554

Int. Cl. C07c *103/52;* C07g *7/00;* C08h *1/00*

U.S. Cl. 260—112.5 **2 Claims**

Corticotropically active octadecapeptides wherein the first amino acid, serine, and the fifteenth amino acid, lysine, in the native corticotropin molecule are substituted respectively by β-alanine and ornithine, derivatives thereof, non-toxic acid addition salts thereof and complexes thereof are disclosed. Such peptides are useful as a medicament, because they show corticotropic properties remarkably improved in prolongation of action. They can be prepared by condensing the amino acids together one by one or by condensing the small peptide fragments together in a per se conventional manner.

3,759,892

AZO DYE WITH A BIS-(2-HYDROXY-3-CARBOXY-PHENYL) METHANE COUPLING COMPONENT

Heinz Wicki, Allschwil, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Feb. 12, 1970, Ser. No. 10,991

Claims priority, application Switzerland, Feb. 19, 1969, 2,496/69; Aug. 22, 1969, 12,772/69

Int. Cl. C09b *29/14, 33/14, 33/18*

U.S. Cl. 260—145 C **28 Claims**

Azo dyes and their metal complex compounds are formed by coupling 1 or 2 moles of a diazo component with a bis-1-(2-hydroxy-3-carboxyphenyl methane. They are highly suitable for dyeing leather, for which they have very good penetrative properties and yield light-fast dyeings.

3,759,893

BISCATIONIC MONOAZO DYES FOR ACID-MODIFIED NYLONS

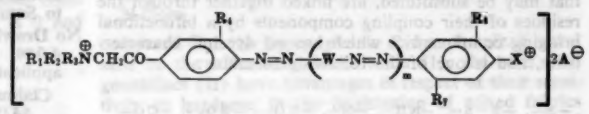
Daniel Shaw James, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 27, 1970, Ser. No. 58,707

Int. Cl. C09b *29/08*

U.S. Cl. 260—149 **2 Claims**

Orange to violet biscationic azo dyes having the formula



where

R_1=alkyl

R_2=alkyl or hydroxyalkyl

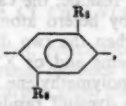
R_3=alkyl, hydroxyalkyl or benzyl

or R_2 and R_3 together=alicyclic ring

or R_1, R_2, and R_3 together=pyridinium ring

R_4=H or Cl

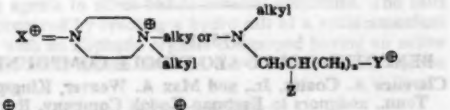
W=1,4-naphthylene or

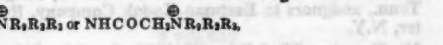


R_5 and R_6=H, alkyl, alkoxy or Cl

R_7=H, alkyl, alkoxy, Cl, NHCO alkyl or $NHCOC_6H_5$

R_8=H, Cl, alkyl or alkoxy





where

R_9=R_1 or H

m=0 or 1

n=0 or 1

Z=H when n=0 and OH when n=1

$A^{\ominus}$=anion

and where alkyl groups contain 1–4 carbon atoms, are particularly well suited for dyeing of bulk continuous filament (BCF) nylon styling carpet, and have good ex-

haust and light-fastness on acid-modified nylon and excellent reserve on unmodified nylons, at the preferred dyeing pH range of 6–6.5. The dyes are prepared by coupling p-aminophenacylammonium or p-(p-aminophenylazo) phenacylammonium salts to N,N-disubstituted anilines containing a pendant tertiary amine or quaternary ammonium group attached to the nitrogen atom.

3,759,894

HETEROCYCLIC DIAZO DYESTUFFS

Hans-Joerg Angliker and Richard Peter, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzehland

No Drawing. Continuation-in-part of abandoned application Ser. No. 716,267, Mar. 12, 1968. This application July 30, 1970, Ser. No. 59,699

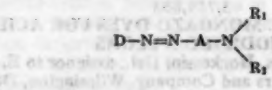
Claims priority, application Switzerland, Mar. 15, 1967, 3,756/67; Aug. 4, 1967, 11,011/67

Int. Cl. C09b *33/02, 33/12;* D06p *3/52*

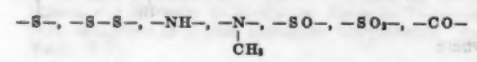
U.S. Cl. 260—158 5 Claims

Disazo dyestuffs in which two monoazo dyestuff molecules of the general formula

(I)



in which D represents the residue of a monocyclic or bicyclic diazo component, A represents a para-phenylene residue and R_1 and R_2 each represents an alkyl residue that may be substituted, are linked together through the residues of their coupling components by a bifunctional bridging component Z which has no dyestuff characteristics, and is one of the following formulae:



and especially a group of the formula —X'—R_5—X'—, in which X' represents an oxygen atom, a sulphur atom or an —NH— group, the hydrogen atom of which may be substituted by an alkyl group having up to 4 carbon atoms, especially a methyl group, and R_5 represents a bifunctional aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic residue, the carbon chain of which may be interrupted by hetero atoms, especially oxygen atoms, and which, when the two diazo components are heterocyclic ring systems and/or X' is an oxygen atom, is preferably not a polymethylene chain and in which both of the monoazo dyestuff residues are joined to the bifunctional residue Z directly via the aromatic nucleus A.

The dyestuffs are used to dye synthetic fibers such as polyester fibers. The dyeings so obtained are very fast to light and to sublimation.

3,759,895

BENZOTHIAZOLYL-AZO-INDOLE COMPOUNDS

Clarence A. Coates, Jr., and Max A. Weaver, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,173

Int. Cl. C09b *29/36*

U.S. Cl. 260—158 7 Claims

Monoazo compounds, which exhibit excellent fastness and dyeability properties on polyamide textile materials on which the compounds produce reddish-yellow to orange shades, consist of a 2-benzothiazolyl diazo component which may be substituted with certain alkyl, alkoxy, cyclohexoxy, aryloxy, halogen and acylamido substituents and an N-carbamoylalkyl- or N-acylamido-alkyl-indole coupling component.

3,759,896

PROCESS FOR MANUFACTURE OF POLYSACCHARIDES WITH ANTITUMOR ACTION

Nobuhiko Komatsu, 485 Tabata-cho, Kita-ku; Syoichi Kikumoto and Keitaro Kimura, both of 1, 6-chome, Yaesu, Chuo-ku; Sumio Sakai, 1–106 of 6, 3-chome, Yayoi-cho, Nakano-ku; Teruo Kamasuka, 1631 Gakuen Nishimachi, Kodaira-shi; and Yoshio Momoki, 31, 3-chome, Shimouma-cho, Setagaya-ku, all of Tokyo, Japan; Shoichi Takada, 967–3, Angyojiriu; and Toshiyuki Yamamoto, 1700, 2-chome, Motogo-cho, both of Kawaguchi-shi, Saitama-ken, Japan; and Junichi Sugayama, 5–13, 3-chome, Sengen-cho, Kurume-machi, Kitatama-gun, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 808,311, Mar. 18, 1969. This application June 10, 1971, Ser. No. 151,977

Claims priority, application Japan, Mar. 28, 1968, 43/19,712

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 8 Claims

Process for manufacture of polysaccharides with antitumor action, mainly consisting of β-(1→3)-linked D-glucose residue.

3,759,897

CERTAIN 1-OXAMOYL-1,4-BENZODIAZEPINES

Hisao Yamamoto, Nishinomiya, Shigeho Inaba, Takarazuka, Tadashi Okamoto and Toshiyuki Hirohashi, Ashiya, Kikuo Ishizumi, Minoo, Michihiro Yamamoto, Toyonaka, Isamu Maruyama, Minoo, Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

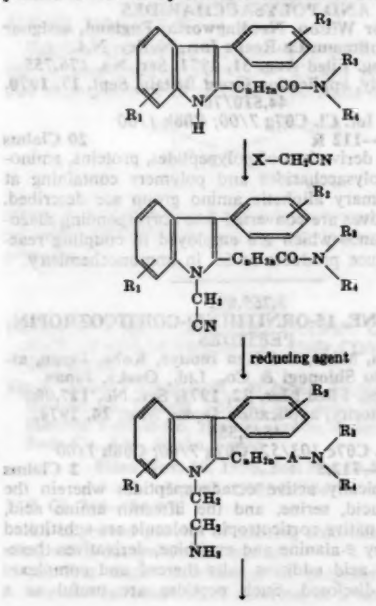
No Drawing. Original application Jan. 19, 1970, Ser. No. 4,040, now Patent No. 3,663,534. Divided and this application Feb. 25, 1972, Ser. No. 229,598

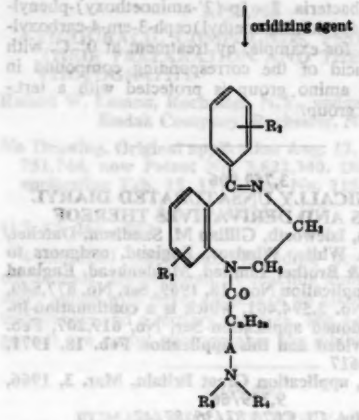
Claims priority, application Japan, Jan. 25, 1969, 44/5,573, 44/5,574, 44/5,575; Apr. 18, 1969, 44/30,604; May 13, 1969, 44/37,159; June 9, 1969, 44/45,690

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD 2 Claims

A novel process for preparing benzodiazepine derivatives and salts thereof, which are useful as tranquilizers, muscle-relaxants, antispasmodics and hypnotics. This process is shown by reaction schema as follows:





wherein R_1 and R_2 signify individually hydrogen atom, halogen atom, lower alkyl group having up to 4 carbon atoms, lower alkoxy group having up to 4 carbon atoms, trihalomethyl group, nitro group or amino group; R_3 and R_4 signify individually hydrogen atom or lower alkyl group having up to 4 carbon atoms; and A signifies a carbonyl group or a methylene group, *n* signifies 0, 1 or 2, and X signifies a halogen atom. Among these compounds, benzodiazepine derivatives wherein *n* is 0 and A is carbonyl group are novel compounds.

3,759,898

SYNTHESIS OF ALPHA-[CARBO(5-INDANYLOXY)] BENZYLPENICILLIN

Susumu Nakanishi, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,502

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 7 Claims

The preparation of α-[carbo(5-indanyloxy)]benzylpenicillin via the esterification of α-carboxypenicillin with 5-indanol in the presence of N,N'-dicyclohexylcarbodiimide in a reaction-inert solvent at a pH of 2–8.

3,759,899

PROCESS FOR INTRODUCING A DELTA 5,6-DOUBLE BOND INTO A STEROID

Percy L. Julian and Arnold Hirsch, Oak Park, Ill., and Ernst Iseli, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation of application Ser. No. 47,907, June 19, 1970. This application Jan. 20, 1972, Ser. No. 219,545

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 34 Claims

The present invention provides a process for introducing an olefinic double bond into the 5,6-position of a steroid by reducing a 5,6-oxido group. Since in general the 5,6-oxido group is formed from a 5,6-unsaturated compound by treatment with an organic peracid, a process for the elimination of such an oxido group with formation of a 5,6-double bond is of special value when a 5,6-oxido group can be used as protective group or for reactions with peracids in other positions of the molecule in which a 5,6-oxido group is formed but is not desired.

3,759,900

OPTICAL BRIGHTENING AGENTS

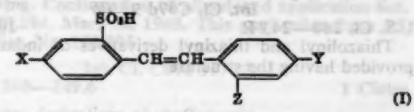
Walter Horstmann, Cologne-Buchheim, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 4, 1970, Ser. No. 43,580
Claims priority, application Germany, June 11, 1969, P 19 29 664.1

Int. Cl. C07d *55/22*

U.S. Cl. 260—240 B 6 Claims

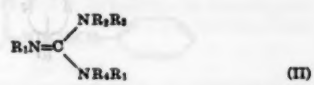
Optical brighteners on the basis of salts of sulphonic acids of the formula



(I)

in which X denotes a triazine, triazole, naphthotriazole, pyrazole, acylamino or urea radical; Y represents H, Cl, CN or X; Z denotes H or —SO_3H,

with guanidines of the general formula



(II)

in which R_1 denotes H, NH_2, alkyl or a carbocyclic radical; R_2, R_3, R_4 and R_5 represent H, alkyl, a carbocyclic radical; and R_2 together with R_3 or R_4 together with R_5 may also denote an alkylene radical linked to the N-atom,

compared with the free sulphonic acid or the alkali metal salts of the stilbene-sulphonic acids (I), the salts with guanidines (II) have advantages in respect of their sensitivity to hardness, in the brightening of mixed fabrics and in simultaneous high quality finishing and optical brightening.

3,759,901

CERTAIN ARYLHYDRAZONALKYL QUATERNARY SALTS

Lewis L. Lincoln and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 28, 1969, Ser. No. 819,946

Int. Cl. C07d *91/44*

U.S. Cl. 260—240 G 8 Claims

Reactive N-substituted, cyclammonium quaternary salts wherein the N-substituent includes substituted alkyl radicals whose terminal carbon atom can be additionally substituted with, for example, a formyl radical, an acetal or thioacetal grouping including cyclic oxyacetals and cyclic thioacetals, or a hydrazono radical which is itself optionally substituted, are useful as chemical intermediates, as photographic addenda such as antifoggants or as nucleating agents in silver halide reversal emulsions. The salts are prepared by reacting a hydro salt of a cyclammonium base with an aliphatic organic compound having an active double bond system between the first and second carbon atoms.

3,759,902

METHINE DYESTUFFS

Hans-Peter Kuhlthau and Klaus-Friedrich Lehment, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,586
Claims priority, application Germany, Aug. 17, 1970, P 20 40 652.4

Int. Cl. C09b *23/00*

U.S. Cl. 260—240.8 10 Claims

Methine dyestuffs, processes for their manufacture and their use of dyeing and printing of polyacrylonitrile, copolymers of acrylonitrile with other vinyl compounds, acid

modified aromatic polyesters, acid modified polyamides, leather, tanned cotton, cellulose, polyurethanes and for the production of writing liquids and stamping inks.

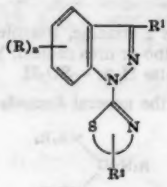
3,759,903

THIAZOLINYL AND THIAZINYL DERIVATIVES OF INDAZOLES

Rudiger D. Haugwitz, Highland Park, and Venkatachala L. Narayanan, Hightstown, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed July 28, 1971, Ser. No. 166,959
Int. Cl. C07d *93/06*
U.S. Cl. 260—243 R 10 Claims

Thiazolinyl and thiazinyl derivatives of indazoles are provided having the structure



which are useful as anthelmintic agents.

3,759,904

7-[D-(α-AMINO-α-PHENYL-, 2-THIENYL- AND 3-THIENYLACETAMIDO)]-3-[S-(1,2,3-TRIAZOLE-5-YL)THIOMETHYL]-3-CEPHEM-4-CARBOXYLIC ACIDS AND SALTS THEREOF

Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 107,448, Jan. 18, 1971. This application July 29, 1971, Ser. No. 167,534
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 24 Claims

7-[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)] - 3 - [S - (1,2,3 - triazole - 5 - yl)thiomethyl]-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitus in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria.

3,759,905

7-[o-, m- AND p-(2' - AMINOETHOXY)PHENYLACETAMIDO] - 3 - (SUBSTITUTED METHYL)-CEPH-3-EM-4-CARBOXYLATES

Raymond Urgel Lemieux, Edmonton, Alberta, and Clinton Gordon Chin, Sherwood Park, Alberta, Canada, assignors to R & L Molecular Research Ltd., Edmonton, Alberta, Canada

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,369
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 29 Claims

7-[o-, m- and p-(2'-aminoethoxy)phenylacetamido]-3-(substituted methyl)-ceph - 3-em-4-carboxylates, wherein the substituent on the "3-methyl" group is hydrogen, acetoxy, pyridinium, picolinium, lutidinium, 5-methyl-1,3,4 - thiadiazol - 2-ylthio, 1-methyl-5-tetrazolylthio or 3-methyl - 1,2,4-thiadiazol-5-ylthio and their zwitterions, betaines and nontoxic, pharmaceutically acceptable acid addition and cationic salts are valuable as antibacterial agents and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many Gram-positive and Gram-negative bacteria. 7 - [p-(2'-aminoethoxy)-phenylacetamido] - 3-(pyridiniummethyl)ceph-3-em-4-carboxylate is prepared, for example, by treatment at 0° C. with trifluoroacetic acid of the corresponding compound in which the free amino group is protected with a tert.-butoxycarbonyl group.

3,759,906

ACETYLENICALLY UNSATURATED DIARYL NITRILES AND DERIVATIVES THEREOF

John F. Cavalla, Isleworth, Gillian M. Sandison, Datchet, and Alan C. White, Windsor, England, assignors to John Wyeth & Brother Limited, Maidenhead, England

No Drawing. Application Nov. 18, 1969, Ser. No. 877,840, now Patent No. 3,594,401, which is a continuation-in-part of abandoned application Ser. No. 619,207, Feb. 28, 1967. Divided and this application Feb. 18, 1971, Ser. No. 116,617
Claims priority, application Great Britain, Mar. 3, 1966, 9,319/66
Int. Cl. C07d *87/36, 87/42*
U.S. Cl. 260—247 12 Claims

Certain diaryl-substituted acetylenically unsaturated compounds bearing a cyano, carboxylic acid, ester, or amide substituent or hydroxymethyl or aminomethyl, and optionally an amino substituent, exhibit useful CNS activity as anticonvulsants and are also useful as anti-inflammatory agents and tranquillizers, etc.

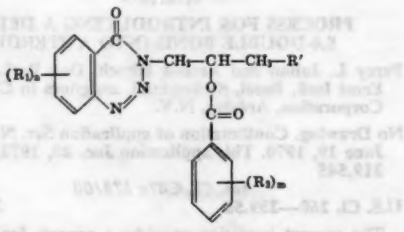
3,759,907

3 - (α-SUBSTITUTED AMINO-β-ALKOXYBENZOXYPROPYL)-6,7- OR 6,7,8-ALKOXY - 1,2,3-BENZOTRIAZINE-4(3H)-ONES

Adolf Stachel, Deceased, by Ingeburg Lydia Katharina Stachel, widow and heiress-at-law, Offenbach am Main, Rudi Beyerle, Bruchkobel, Rolf-Eberhard Nitz, Bergen-Enkheim, and Klaus Resag and Eckhard Schraven, Frankfurt am Main-Fechenheim, Germany; said Beyerle, Nitz and Schraven assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

No Drawing. Original application May 18, 1970, Ser. No. 38,544, now Patent No. 3,706,739. Divided and this application June 22, 1972, Ser. No. 265,225
Claims priority, application Germany, May 22, 1969, P 19 26 075.4
Int. Cl. C07d *55/08*
U.S. Cl. 260—248 AS 3 Claims

The present invention pertains to new, pharmacologically valuable basically substituted 1,2,3-benzothiazine-4(3H)-one derivatives having excellent coronary dilator properties and which have the structural formula



wherein R' is a N-methyl-N-cycloalkylamino radical, cycloalkyl having 3–6 carbon atoms, said radical being bound via its nitrogen atom; R_1 is a lower alkoxy group having 1–4 carbon atoms which may be in the 6,7 or 6,7,8-position; R_2 is an alkoxy group having 1–4 carbon atoms; *m* is an integer selected from 1, 2 and 3; and *n* is an integer selected from the group consisting of 2 and 3 and pharmaceutically acceptable acid addition salts thereof.

3,759,908

4-THIOURACIL COMPOUNDS, PROCESS FOR THEIR PREPARATION AND THEIR USE IN PHOTOGRAPHY

Robert W. Lamon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Aug. 12, 1968, Ser. No. 751,744, now Patent No. 3,622,340. Divided and this application Feb. 12, 1971, Ser. No. 115,088

Int. Cl. C07d 51/32

U.S. Cl. 260—251 1 Claim

4-thiouracil compounds, including novel 4-thiouracil compounds, are prepared by reacting ammonia or a primary amine with novel adducts of an alkoxycarbonyl isothiocyanate and a tertiary enamine. The 4-thiouracil compounds are useful photographic fog inhibitors.

3,759,909

FUMARAMIC ACID DERIVATIVES

Howard A. Hageman, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 523,545, Jan. 28, 1966. This application May 16, 1969, Ser. No. 825,441

Int. Cl. C07d 87/42

U.S. Cl. 260—247.2 A 21 Claims

N-[disubstituted amino] fumaramic acids and their preparation. Useful as plant growth regulants.

3,759,910

TRIAZOLO TRIAZINONES

Karlfried Dickore and Ludwig Eue, both % Farbenfabriken Bayer AG., Leverkusen, Germany

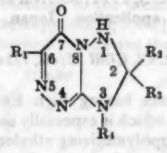
No Drawing. Filed Dec. 9, 1970, Ser. No. 96,647

Claims priority, application Germany, Dec. 31, 1969, P 19 65 739.7

Int. Cl. C07d 57/34

U.S. Cl. 260—249.5 21 Claims

New 1,2,3,7 - tetrahydro-[1,2,4]triazolo[3,2-c][1,2,4]-triazinone-(7) compounds of the formula



in which:

R_1 is hydrogen, substituted or unsubstituted alkyl, alkenyl, cycloalkyl, aralkyl or aryl;

R_2 and R_3 individually are hydrogen, substituted or unsubstituted alkyl, alkenyl, cycloalkyl, cycloalkenyl or aralkyl; and

R_2 and R_3 taken together, are alkylene of from 4 to 7 ring carbon atoms which may carry one or more alkyl group substituents, and

R_4 is hydrogen, alkyl, alkenyl, aralkyl or substituted or unsubstituted aryl

are prepared by a novel synthesis by reacting the corresponding diamino dihydro triazinone compound with an oxo compound of the formula

in the presence of a lower alkanoic acid.

The novel compounds are outstandingly effective as herbicides, e.g., as selective herbicides.

3,759,911

TRIAZINE DERIVATIVES

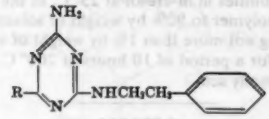
Tsutomu Irikura, Yasuo Abe, Kyuya Okamura, Kyoichi Higo, Akitoshi Maeda, and Fumihiko Morinaga, Tokyo, Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 808,294, Mar. 18, 1969. This application June 15, 1971, Ser. No. 153,395

Int. Cl. C07d 55/22

U.S. Cl. 260—249.6 1 Claim

s-Triazine derivatives of the formula



wherein R is pyrrolidino, piperidino, 2-ketopiperazine-4-yl or NR_1R_2, R_1 being hydrogen or straight or branched alkyl of from 1–6 carbon atoms and R_2 being cycloalkyl or straight or branched alkyl of 1–6 carbon atoms, and the acid addition salts of the compound with organic or inorganic acids.

3,759,912

QUINOXALINES

Romano Derungs, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

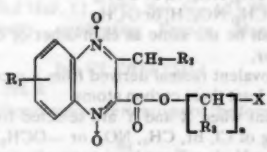
No Drawing. Filed Nov. 25, 1970, Ser. No. 92,905

Claims priority, application Switzerland, Dec. 12, 1969, 18,520/69

Int. Cl. C07d 51/78

U.S. Cl. 260—250 R 4 Claims

Compounds of the formula



I

in which R_1 represents hydrogen, halogen, lower alkyl or lower alkoxy, R_2 represents hydrogen, halogen, lower alkanoyloxy, aroyloxy, heterocyclylcarbonyloxy, lower alkanoylthio, aroylthio or heterocyclylcarbonylthio; R_3 represents hydrogen or lower alkyl, *n* denotes a number from 2 to 5 inclusive; X represents lower alkoxy, lower alkylthio, lower dialkylamino, a monocyclic 5- or 6-membered saturated heterocyclic amino or a monocyclic 5- or 6-membered saturated herterocyclic amino containing an additional hetero atom selected from the group of oxygen, sulphur or nitrogen,

useful as broad spectrum antimicrobials in human and veterinary medicine; novel intermediates useful in their preparation; processes for their production from the appropriate quinoxaline, N-monoxide quinoxaline, quinoxaline carboxylic acid or furazan oxide are disclosed.

3,759,913

POLYIMIDE POLYMERS OF BENZOPHENONE TETRACARBOXYLIC DIANHYDRIDES AND SATURATED ALIPHATIC DIAMINES

William D. Blackley, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 2,644, Jan. 13, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 287,858

Int. Cl. C08g 20/32

U.S. Cl. 260—33.4 P 8 Claims

The invention comprises solid, tack-free, thermo-setting linear polyimides of benzophenone tetracarboxylic dianhydride and a saturated aliphatic diamine having from three to 12 carbon atoms, containing not more than a 2% excess of dianhydride or diamine over the amount needed to form the linear polyimide. The adhesives of the present invention have softening points between 150° C. and 300° C., inherent viscosities of about 0.1 and 2.0 as measured from a 0.5% solution of polyimide in m-cresol at 25° C. and substantially complete solubilities in m-cresol at 25° C. in the ratio of 10% by weight of polymer to 90% by weight of solvent, said polyimides releasing not more than 1% by weight of volatiles upon being heated for a period of 10 hours at 200° C. and thereby rendered thermally set.

3,759,914

IMPROVED CURING COMPOSITIONS FOR EPOXY RESINS COMPRISING LATENT AMINE CURING AGENT AND ACCELERATOR

John A. Simms, and Henry S. Tremper, III, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 10, 1971, Ser. No. 170,623

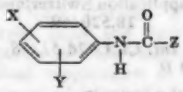
Int. Cl. C08g 30/14, 51/04

U.S. Cl. 260—37 EP 11 Claims

Composition, useful for curing polyepoxide having a plurality of 1,2-epoxy groups comprising an admixture of:

A. a latent amine curing agent for a polyepoxide having a plurality of 1,2-epoxy groups, and

B. an accelerator for (A), the accelerator having the formula



wherein

X = Cl, Br, CH_3, NO_2, H, or OCH_3

Y = Cl, Br, CH_3, NO_2, H, or OCH_3

X and Y can be the same as each other or different from each other,

Z = a monovalent radical derived from a secondary amine having at least three carbon atoms,

provided that when X and Y are selected from the group consisting of Cl, Br, CH_3, NO_2, or $-OCH_3$ or when X = Br and Y = H, then Z can be a monovalent radical derived from a secondary amine having at least two carbon atoms, the accelerator being present in an amount of about 0.1–300 percent by weight based on the weight of the latent amine curing agent.

3,759,915

CAULKING COMPOSITION COMPRISING POLYMER HAVING ADDITION POLYMERIZED BACKBONE HAVING CARBOXYL GROUPS ESTERIFIED WITH DRYING OIL FATTY ACID HYDROXYAMIDE

Roger H. Kottke, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 81,529, Oct. 16, 1970, abandoned. This application Aug. 30, 1971, Ser. No. 176,338

Int. Cl. C08f 45/02

U.S. Cl. 260—41 R 9 Claims

The caulking or sealing composition of the invention has as its binder an acrylic backbone containing pendant unsaturated groups, preferably derived from drying oil fatty acids, and attached to the acrylic backbone through amidoester linkages. The acrylic modified product has the flexibility and durability characteristic of acrylics, and the advantage that the composition will cure similarly to drying oils, using driers such as cobalt naphthenate and zinc naphthenate.

3,759,916

PROCESS FOR TRIMERIZING POLYISOCYANATES WITH PYRAZINE CATALYSTS

James J. Pitts, Wallingford, and John S. Babiec, Jr., Milford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 27, 1972, Ser. No. 238,661

Int. Cl. C08g 22/36, 22/44

U.S. Cl. 260—77.5 NC 9 Claims

A process for trimerizing organic polyisocyanates using selected pyrazine compounds as catalysts. The trimers produced are useful in the preparation of polyurethane resins.

3,759,917

USE OF AN OPEN-BARREL SCREW PRESS DRYER FOR CHAIN-BRANCHING AN EPDM COPOLYMER

Lawrence Klinge Layton, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 8, 1971, Ser. No. 132,290

Int. Cl. C08f 15/40

U.S. Cl. 260—79.5 PR 13 Claims

The use of the water-vaporizing section of an open-barrel screw press dryer for simultaneously drying and chain-branching a copolymer, said use consisting essentially of introducing said copolymer into one end of said dryer, introducing a promoter into said water-vaporizing section at one or more points on said barrel, and heating the resulting mixture while conveying the mixture through said water-vaporizing section, thereby forming a vulcanizable branched elastomeric polymer. The branched polymers are useful for improving the ozone resistance of blends with other elastomers.

3,759,918

PROCESS FOR PREPARING ETHYLENE COPOLYMER

Kazuo Yamaguchi; Masayoshi Hasuo, and Isao Ito, all of Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Dec. 3, 1971, Ser. No. 204,747

Claims priority, application Japan, Dec. 15, 1970, 45/112258

Int. Cl. C08f 15/40, 1/54

U.S. Cl. 260—80.7 7 Claims

Ethylene copolymers having high Environmental Stress Cracking Resistance, which is especially useful for blow-molding, is prepared by copolymerizing ethylene with at least one α-olefin, in the presence of a catalyst system comprising:(1) chromium oxide supported on silica or silica-alumina having an average pore diameter or 150–10A and (2) pentaalkylsiloxyalane or dihydrocarbyl aluminum hydrocarbonoxide.

3,759,919

COPOLYMERIZATION OF A CONJUGATED DIENE WITH A VINYL AROMATIC COMPOUND

Jean-Paul Dillenschneider, Beaumont, France, assignor to Compagnie Generale des Etablissements Michelin, raison Societe Michelin & Cie, Clermont-Ferrant, France

Filed Apr. 1, 1971, Ser. No. 130,498

Claims priority, application France, Apr. 9, 1970, 7012942

Int. Cl. C08f 19/06, 19/08, 1/74

U.S. Cl. 260—83.7 9 Claims

In the solution copolymerization of a conjugated diene monomer with a vinyl aromatic monomer dissolved in a hydrocarbon solvent reaction medium therefor containing a solubilized organolithium copolymerization initiator, the distribution of the monomers along the macromolecular

copolymer chain can be rendered uniform or variably controlled while also reducing the 1,2- or 3,4- addition content of the conjugated diene monomer within the copolymer product molecules in a reproducible manner by conducting the copolymerization in the reaction medium which contains a weakly polar solution of a complex of an aromatic ketone with an alkali metal other than lithium.

3,759,920

PROCESS FOR THE PREPARATION OF 1-SUBSTITUTED-PHENYL-2(1H)-QUINAZOLINONES

Jerome Linder, Westfield, N.J.; Paul G. Mattner, Brooklyn, N.Y., and William G. Salmond, Mount Arlington, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed June 24, 1971, Ser. No. 156,460

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 QB **10 Claims**

1-alkyl-4-phenyl-2(1H)-quinazolinones, e.g., 1-isopropyl-7-methyl-4-phenyl-2(1H)-quinazolinone, are prepared by the reaction of an alkyl-N-alkyl-N-(substituted or unsubstituted-2-benzoyl-phenyl)-carbamates with ammonium salts of aliphatic carboxylic acids. The compounds are useful as anti-inflammatory and analgesic agents.

3,759,921

METHOD OF SUPPRESSING IMMUNERESPONSE WITH 1 SUBSTITUTED-3-(2 PYRIMIDYL)UREAS

Charles J. Paget, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 867,079, Oct. 16, 1969, abandoned. This application June 9, 1971, Ser. No. 151,540

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **3 Claims**

1-Substituted-3-(2-pyrimidyl)ureas as immunosuppressants and as antiviral agents.

3,759,922

PREPARATION OF PYRIMIDO(5,4-C)(1,5) BENZ OXAZEPIN-5(11H)-ONES AND INTERMEDIATES

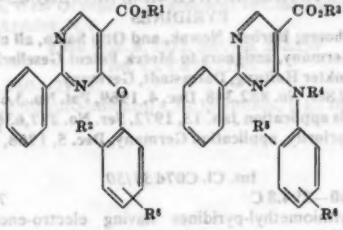
Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed June 25, 1971, Ser. No. 156,941

Int. Cl. C07d *99/10*

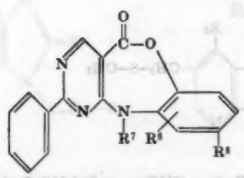
U.S. Cl. 260—256.4 F **5 Claims**

The disclosure is directed to the method of preparing and the resultant products of pyrimido[5,4-c][1,5]-benzoxazepin-5(11H)-ones and intermediates having the general formulae:



(I)

(II)



(III)

where R^1–R^8 are as defined below. The products are prepared by a series of reactions involving first reacting 5-carbethoxy-4-chloro-2-phenyl pyrimidine with o-nitrophenol, catalytically reducing, and then hydrolizing the product, and finally treating the reduced carboxylic acid product with an acid anhydride. The final products are pharmacodynamically active, particularly as central nervous system depressants. That is, the products produce a calming effect in the host, inter alia.

3,759,923

QUINOBENZOXA(OR THIA)ZEPIN-3-ONES

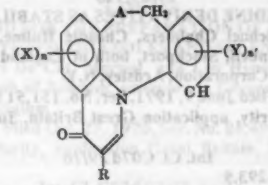
Harry Louis Yale, and Ramesh B. Petigara, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,614

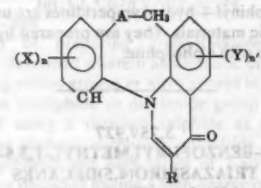
Int. Cl. C07d *87/54*

U.S. Cl. 260—283 S **6 Claims**

Quinobenzoxa(or thia)zepin-3-one derivatives are provided having the structures



or



wherein X, Y, R, n, n′ and A are as defined hereinafter. These compounds are useful as antifungal agents and antibacterial agents.

3,759,924

1-AMINO-3(OR4)-PHENYL-3,4-DEHYDROISOQUINOLINES

Claude Jeanmart, Brunoy; Mayer Naoum Messer, Dievres, and Pierre Simon, Hauts-de-Seine, all of France, assignors to Rhone-Poulenc S.A., Paris, France

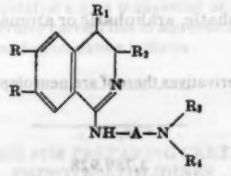
Filed Mar. 11, 1971, Ser. No. 123,375

Claims priority, application France, Mar. 12, 1970, 7008932

Int. Cl. C07d *35/14*

U.S. Cl. 260—286 R **9 Claims**

3,4-Dihydroisoquinoline derivatives of the formula:-



wherein the symbols R represent hydrogen, halogen or methoxy, or together form the methylenedioxy radical, the symbols R_1 and R_2 represent hydrogen or phenyl, at least one of the symbols R_1 and R_2 representing phenyl, the symbol A represents an alkylene radical, and (a) the symbols R_3 and R_4 represent alkyl, or (b) R_3 represents alkylene forming a nitrogen-containing heterocyclic ring by attachment to a carbon atom of the alkylene radical A, and R_4 represents alkyl, or (c) the symbols R_3 and R_4 together with the nitrogen atom form a mononuclear heterocyclic group optionally substituted by alkyl, are useful as anti-arhythmic agents.

3,759,925

PREPARATION OF BICYCLICAL LACTAMS

Martin Cherubim, Rheinkamp-Eick, and Faisal Abodagga, Rheinkamp-Utfort, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Munich, Germany

Filed Aug. 28, 1972, Ser. No. 284,191

Claims priority, application Germany, Sept. 3, 1971, P 21 44 178.1

Int. Cl. C07d *39/10*

U.S. Cl. 260—293.55 9 Claims

1,8-Diaza-9,10-dialkyl-bicyclo-(4,4,0)-decane-(2,7)-diones are prepared by reacting a dicyanoethylated ketone, such as 2,2-di (beta-cyanoethyl)-butanone-3 in the presence of an inert solvent, such as methyl alcohol, and a basic catalyst at a temperature of about 20° to about 200° C.

3,759,926

PIPERIDINE DERIVATIVES AS STABILIZERS

Alexander Michael Chalmers, Cheadle Hulme, and Donald Richard Randell, Stockport, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 9, 1971, Ser. No. 151,511

Claims priority, application Great Britain, June 10, 1970, 28,063/70

Int. Cl. C07d *29/16*

U.S. Cl. 260—293.9 8 Claims

New 4-Phosphinyl-4-hydroxypiperidines are useful as stabilizers for organic materials. They are prepared by reacting a 4-keto-piperidine with a phosphite.

3,759,927

B-BENZOFURYLMETHYL-1,3,8-TRIAZASPIRO(4,5)DECANES

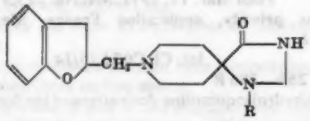
Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 183,694, Sept. 24, 1971, which is a continuation-in-part of Ser. No. 105,126, Jan. 8, 1971, abandoned. This application Nov. 10, 1971, Ser. No. 197,475

Int. Cl. C07d *49/34*

U.S. Cl. 260—293.58 7 Claims

8-[1-(2,3-dihydro-2-benzofuryl)-alkyl]-1,3,8-triazaspiro(4,5)decanes, e.g. those of the formula



R=H, aliphatic, araliphatic or aromatic radical

or functional derivatives thereof are neuroleptic agents.

3,759,928

DIPHENYL-METHYLENE-N-BENZYL-PIPERIDINES

Dusan Zivkovic, Rhode-Saint-Genese, Belgium, assignor to U.C.B., Societe Anonyme, Bruxelles, Belgium

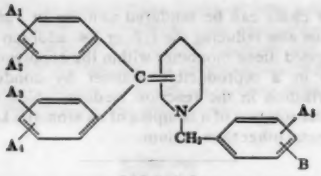
Filed June 2, 1970, Ser. No. 42,893

Claims priority, application Great Britain, June 5, 1969, 28,569/69

Int. Cl. C07d *29/12*

U.S. Cl. 260—293.72 11 Claims

Blood circulation activating, anti-arrhythmic and antihistaminic diphenyl-methylene-N-benzyl-piperidines having the general formula



wherein A_1, A_2, A_3, A_4, A_5 and B, taken separately, each represents hydrogen, halogen, halomethyl, alkyl, alkoxy, nitro, cyano or amino, and

A_5 and B, taken together, represent a bivalent radical selected from the group consisting of alkylene, alkenylene and alkadienylene having 3 to 5 carbon atoms and alkylene dioxy having 1 to 3 carbon atoms, said bivalent radical being connected to two adjacent carbon atoms of the benzene nucleus,

with the proviso that when A_1, A_2, A_3, A_4, A_5 and B are all hydrogen atoms, the diphenyl-methylene radical is in the ortho or meta position with regard to the nitrogen atom in the piperidine nucleus,

and the addition salts thereof with pharmaceutically acceptable inorganic or organic acids.

3,759,929

MANUFACTURE OF β-HYDROXY CARBONYL COMPOUNDS AND/OR α-UNSATURATED CARBONYL COMPOUNDS

Georg Klotmann, Ludwigshafen, and Herbert Mueller, Frankenthal, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Nov. 2, 1970, Ser. No. 86,389

Int. Cl. C07d *29/24*

U.S. Cl. 260—293.88 5 Claims

The manufacture of β-hydroxy carbonyl compounds and/or α-unsaturated carbonyl compounds by the reaction of ketones with derivatives of glyoxylic acid and derivatives of α-ketoaldehydes in the absence of catalysts at a temperature below 140° C.

Some of the compounds obtainable by the process of the invention are solvents and valuable starting materials for the manufacture of dyes, plastics, adhesives and varnishes.

3,759,930

CERTAIN 8-METHYL-4-HYDROXY-5-METHYLTHIOMETHYL-4H-M DIOXINO/4,5-C/ PYRIDINES

Gustav Schorre; Herbert Nowak, and Otto Saiko, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

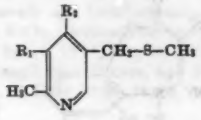
Division of Ser. No. 882,348, Dec. 4, 1969, Pat. No. 3,658,825. This application Jan. 13, 1972, Ser. No. 217,636

Claims priority, application Germany, Dec. 5, 1968, P 18 12 794.1

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C 7 Claims

5-Methylthiomethyl-pyridines having electro-encephalogram-modifying and anti-lipidic activity of the formula



wherein R_1 is OH and R_2 is —CHO or $-CH_2NR_3R_4$ in which R_3 and R_4 are H or lower-alkyl or, collectively a methylene chain containing 4 or 5 carbon atoms, or R_1 and R_2 collective-

ly are a group of the formula —O—CR_5R_6—O—CHOH— in which R_5 and R_6 have the same values as R_3 and R_4 or, when R_6 is H, R_5 can be also an unsubstituted or substituted phenyl group.

3,759,931

NEW MEROCYANINE DYESTUFFS

David Sydney Brown; Geoffrey Ernest Ficken, apd Elizabeth Joan Treherne, all of Ilford, England, assignors to Ilford Limited, Ilford, England

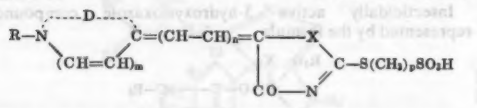
Filed Oct. 22, 1971, Ser. No. 191,797

Claims priority, application Great Britain, Oct. 27, 1970, 51,031/70

Int. Cl. C09b *23/10*

U.S. Cl. 260—294.8 D **2 Claims**

New merocyanine dyestuffs of the formula



wherein R is alkyl or aralkyl, X is oxygen or sulphur, *m* is 0 or 1, *n* is 0 or 1, *p* is 1 to 4 and D is the residue of a heterocyclic ring, electrophotographic material comprising said dyestuffs as sensitizers and a liquid sensitizer for electrophotographic material are disclosed.

3,759,932

METHOD FOR PREPARING MERCAPTOPYRIDINES USING ALKALI METAL POLYSULFIDES

David F. Gavin, Cheshire, and Maurice A. Raymond, Northford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 33,517, April 30, 1970, abandoned. This application Aug. 25, 1972, Ser. No. 283,862

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 G **13 Claims**

This invention relates to an improved and economical method for preparing mercaptopyridines by reaction of selected halosubstituted pyridines with an alkali metal polysulfide.

3,759,933

3H-IMIDAZO(4,5-C)PYRIDINES

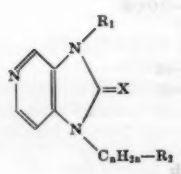
Michael Mullen Robison, Bottmingen, Switzerland, and Neville Finch, West Orange, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,259

Int. Cl. C07d *31/40*

U.S. Cl. 260—295 K **3 Claims**

3H-1,2-dihydro-imidazo[4,5-c]pyridines, e.g., those of the formula



R_1 = H or aliphatic radical
X = O or S, n = 0 to 4
R_2 = aromatic radical

acyl derivatives, N-oxides, quaternaries or salts thereof exhibit anti-inflammatory effects.

3,759,934

2,3 OR 4-PYRI DINEMETHANOL-ALPHA-SUBSTITUTED OR UNSUBSTITUTED PHENYLS-ALPHA-(2 OR 3-ALKOXY-1-NAPHTHYLS)

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Dec. 9, 1970, Ser. No. 96,667

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 B **13 Claims**

2,3 Or 4-pyridinemethanol-α-substituted or unsubstituted phenyls-α-(2 or 3-alkoxy-1-naphthyls), e.g., 4-pyridinemethanol-α-phenyl-α-(2-methoxy-1-naphthyl), prepared by treating a 1-lithium-2-methoxynaphthalene with a 4-pyridyl phenyl ketone. The compounds are useful as hypolipidemic agents.

3,759,935

METHOD FOR THE PREPARATION OF 2-ALKYL SUBSTITUTED THIAZOLES AND SELENAZOLES

Arthur Henri De Cat, Mortsel, and Leo Hypoliet Manssens, Schilde, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Oct. 27, 1970, Ser. No. 84,490

Claims priority, application Great Britain, Nov. 3, 1969, 53,824/69

Int. Cl. C07d *97/02, 91/44*

U.S. Cl. 260—298 **9 Claims**

A method of preparing 2-alkylthiazoles or 2-alkylselenazoles is described wherein an aromatic disulphide or diselenide having amino groups or nitro groups in the 2-positions relative to the disulphide or diselenide group is catalytically hydrogenated using a rhenium sulphide as catalyst in the presence of an aliphatic carboxylic anhydride. The method is a one-step synthesis and high yields of 2-alkyl thiazoles or selenazoles are obtained having a high degree of purity.

3,759,936

OXIDATION OF O-TOLUENESULFONAMIDES BY MOLECULAR OXYGEN

Paulin Mounier, Rhone, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Mar. 31, 1971, Ser. No. 129,976

Claims priority, application France, Apr. 1, 1970, 7011659; Nov. 16, 1970, 7040970

Int. Cl. C07d *91/08*

U.S. Cl. 260—301 **8 Claims**

Compounds containing a 1,2-benzisothiazolidin-3-one-1,1-dioxide group, notably saccharin are prepared by a 1 step oxidation of an ortho-toluenesulphonamide compound with molecular oxygen in the liquid phase in the presence of a metal oxidation catalyst e.g., a manganese or cobalt salt. The oxidation is preferably carried out in aqueous acetic acid using carbonyl compound as oxidation initiator.

3,759,937

PROCESS FOR PREPARING CERTAIN 2-IMINOTHIAZOLIDINES

Asbjorn Baklien, Kingsbury, Victoria, and Jan Kolm, Kew, Victoria, both of Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia

Filed July 14, 1966, Ser. No. 565,092

Claims priority, application Australia, July 19, 1965, 61653/65

Int. Cl. C07d *91/18*

U.S. Cl. 260—306.7 **21 Claims**

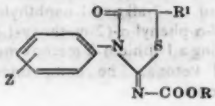
Process for preparing certain 2-imino-thiazolidines which comprises reacting certain aziridines with thiourea or thiocyanic acid.

3,759,938
THIAZOLIDINE DERIVATIVES

Raymond Giraudon, Lesigny, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed July 15, 1971, Ser. No. 163,071
Claims priority, application France, July 17, 1970, 7026473; Oct. 9, 1970, 7036618; Apr. 16, 1971, 7113534
Int. Cl. C07d 91/16
U.S. Cl. 260—306.7 14 Claims

Compounds of the formula:



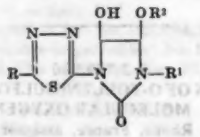
wherein R represents alkyl of one through four carbon atoms, R^1 represents hydrogen, alkyl of one through four carbon atoms or phenyl, and Z represents amino or a group -NH-CO-R^2 in which R^2 represents hydrogen, or alkyl or alkoxy of one through four carbon atoms, possess fungicidal and anthelmintic properties.

3,759,939
CERTAIN 1-(1,3,4-THIADIAZOL-2-YL)-IMIDAZOLIDINONE-(2) COMPOUNDS

Carl Metzger, Wuppertal-Elberfeld; Dietrich Rucker, Bietigheim, and Ludwig Eue, Koeln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 10, 1971, Ser. No. 123,013
Claims priority, application Germany, Mar. 20, 1970, P 20 13 406.9
Int. Cl. C07d 99/08
U.S. Cl. 260—306.8 D 11 Claims

Certain novel 1-(1,3,4-thiadiazol-2-yl)-imidazolidinone-(2) compounds of the formula:



in which

R is hydrogen, alkyl, haloalkyl, cycloalkyl, alkoxy, alkoxyalkyl, halocycloalkyl, alkoxyalkylthio, unsubstituted and substituted aryl, alkenyl, alkynl, alkylthio, (optionally substituted) aralkylthio, alkenylthio, alkynylthio or alkyl-, alkenyl-, alkynyl and aralkyl-sulfur substituents in which the sulfur is oxidized to sulfonyl or sulfoxy;

R_1 is lower alkyl, alkenyl or alkynyl; and

R_2 is lower alkyl or alkenyl;

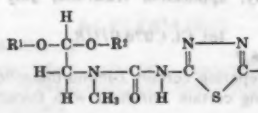
are outstandingly effective herbicides exhibiting particularly selective action.

3,759,940
DIALKYL ACETALS OF HETEROCYCLIC UREIDOACETALDEHYDE

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 13, 1971, Ser. No. 207,529
Int. Cl. C07d 91/62
U.S. Cl. 260—306.8 D 4 Claims

This invention discloses new chemical compounds of the formula



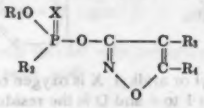
wherein R^1 and R^2 are each alkyl of up to three carbon atoms. Further described are herbicidal compositions utilizing the above defined compositions.

3,759,941
INSECTICIDAL ISOXAZOLE DERIVATIVES

Nobuyoshi Sampei; Kazuo Tomita, and Hideakira Tsuji, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 812,965, March 20, 1969, abandoned, Continuation-in-part of Ser. No. 573,211, Aug. 18, 1966, abandoned. This application May 5, 1970, Ser. No. 34,867
Claims priority, application Japan, Aug. 20, 1965, 40/50835; Sept. 4, 1965, 40/54144; Sept. 11, 1965, 40/55537; Sept. 13, 1965, 40/56025; July 5, 1966, 41/43202
Int. Cl. C07d 85/22
U.S. Cl. 260—307 H 11 Claims

Insecticidally active 3-hydroxyisoxazole compounds represented by the formula



wherein

R_1 is alkyl group, preferably having one to five carbon atoms;

R_2 is alkoxy group, preferably having one to five carbon atoms or phenyl group;

R_3 is hydrogen, halogen or alkyl group, preferably having one to five carbon atoms;

R_4 is hydrogen, alkyl group, preferably having one to 10 carbon atoms, phenyl group which may be substituted with such substituent or substituents as alkyl, alkoxy, halogen, nitro or cyano, alkoxycarbonyl, preferably having two to six carbon atoms, amino group, or dialkoxymethyl group having one to five carbon atoms in each alkoxy moiety; and

X is sulfur or oxygen atom.

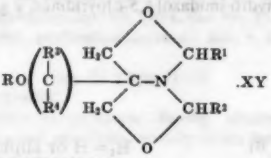
Method for combatting harmful insects which comprises applying to said insects an insecticidally effective amount of a compound having the above formula.

3,759,942
CROSSLINKING MONOMERS CONTAINING THE 1-AZA-3,7-DIOXABICYCLO [3.3.0] OCTANE STRUCTURE

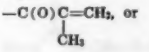
Richard J. Himics, Lake Hiawatha, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

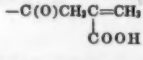
Filed June 8, 1970, Ser. No. 44,534
Int. Cl. C07d 85/26
U.S. Cl. 260—307 F 10 Claims

Compounds having the structure



wherein R is $-C(O)CH=CH_2$,





R^1 and R^2 is each hydrogen, phenyl, halophenyl, or alkyl of one to 20 carbon atoms and may be the same or different; R^3 and R^4 is each hydrogen; XY may be absent; X may be

hydrogen and Y may be a p-toluenesulfonate radical or a picrate radical; or X may be alkyl of one to 20 carbon atoms and Y may be a halogen, such as 1-aza-5-acryloxymethyl-3,7-dioxabicyclo [3.3.0] octane, are radiation curable and are suitable for use in printing inks, coating compositions, adhesives, and the like.

3,759,943

AMIDO AND AMINO TRIAZOLO BENZODIAZEPINES

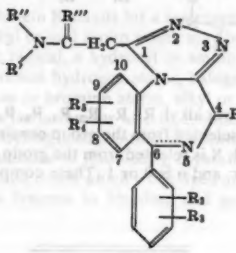
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 28, 1971, Ser. No. 138,287

Int. Cl. C07d *57/02, 99/02*

U.S. Cl. 260—308 R **3 Claims**

Compounds of the formula:

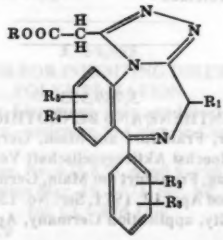


(V)

wherein R′ and R″ are hydrogen, alkyl of one to three carbon atoms, inclusive, or together

are pyrrolidino, piperidino, hexamethyleneimino, or morpholino; wherein R‴ is

or oxygen; R_1 is hydrogen or alkyl defined as above; R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl defined as above, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, and dialkylamino, in which the carbon chain moiety is of one to three carbon atoms, inclusive, and in which the five to six nitrogen-carbon linkage is selected from the group consisting of double bonds and single bonds, with the proviso that the linkage is always a double bond whenever R‴ is oxygen; are produced from the carboxylic acid esters (I)



I

wherein R_1, R_2, R_3, R_4, and R_5 are defined as above and R is alkyl of one to three carbon atoms, inclusive.

3,759,944

ISOTHIOUREAS AND THEIR DERIVATIVES

James Whyte Black, Hempstead; Graham John Durant, Welwyn Garden City; John Colin Emmett, Kimpton, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Oct. 14, 1970, Ser. No. 80,818

Int. Cl. C07d *49/18, 49/36, 55/06*

U.S. Cl. 260—309 **5 Claims**

S-(Heterocyclic-alkyl)isothioureas and a method of inhibiting histamine activity.

3,759,945

ALIPHATIC OXAALKYL-2,4,5-TRIHALOGENO-IMIDAZOLES

Hans Rutz, Basel, and Kurt Gubler, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 723,903, April 24, 1968, Pat. No. 3,625,953. This application June 28, 1971, Ser. No. 157,698

Claims priority, application Switzerland, Apr. 26, 1967, 5960/67The portion of the term of this patent subsequent to Dec. 7, 1988, has been disclaimed.

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **3 Claims**

2,4,5-trihalogeno-imidazoles substituted in 1-position at the imidazole nucleus by a group of the formula R—O—A— wherein R represents an optionally substituted aliphatic hydrocarbon radical and A represents an alkylene group, are described, which imidazoles are herbicidally active and useful in the control of weeds and the like undesirable plant growth; herbicidal compositions containing such imidazoles as active ingredients, and method of controlling undesirable plant growth with the aid of such compounds are also disclosed.

3,759,946

1-ARYLOXY-4,5-DIPHENYLIMIDAZOLES

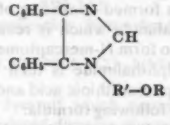
Yoshio Osawa, Yokohama, and Koitiro Ueno, Kawasaki, both of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 708,203, Feb. 26, 1968, abandoned. This application Sept. 20, 1971, Ser. No. 182,174

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **10 Claims**

Imidazole derivatives represented by the general formula :



wherein R is a member of group consisting of alkyl group of one to four carbon atoms and aryl group, and R′ is a member of alkylene group of one to six carbons and a process for the preparation thereof.

3,759,947

TERT-SILYL AND TERT-ALKYL PHTHALOCYANINE DYESTUFFS

Andre Pugin, Riehen; Heinrich Hopfe, Kusnacht, and Pasquale Gallegra, Zurich, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 758,671, Sept. 10, 1968, abandoned, which is a continuation-in-part of Ser. No. 717,382, March 29, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,501

Claims priority, application Switzerland, Sept. 15, 1967, 12945/67; Apr. 7, 1967, 4980/67

Int. Cl. C09b *47/04*

U.S. Cl. 260—314.5 **5 Claims**

Unmetallized and metallized phthalocyanine dyestuffs being substituted in the benzene nuclei of the phthalocyanine

system by from one to four organically trisubstituted tertiary silyl or alkyl groups are described, which dyestuffs are useful for the coloring of synthetic macromolecular materials of polymerizates and polycondensation products, in particular by dyeing in the mass especially of synthetic polyamide and polyolefine fibers; those of the new dyestuffs containing three or, preferably, four tertiary silyl or alkyl groups per phthalocyanine nucleus being of particularly good solubility in certain organic solvents and also useful, apart from the above purposes, for the dyeing of lacquer raw materials, while those new dyestuffs having fewer tertiary silyl or alkyl groups and especially those having only one tertiary silyl or alkyl group per phthalocyanine nucleus are useful as pigments and for the coloring, in the mass, of polyolefin fibers.

3,759,948

NON-STEROID ANTI-INFLAMMATORY COMPOUNDS

Tsung-Ying Shen; Bruce E. Witzel; Gordon L. Walford, all of Westfield, and William V. Ruyle, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 836,603, June 25, 1969, Pat. No. 3,655,697. This application Nov. 1, 1971, Ser. No. 194,598

Int. Cl. C07d *63/24, 27/68*

U.S. Cl. 260—315 **8 Claims**

This invention relates to new tricyclic carboxylic acid and ester derivatives and processes for their preparation. These compounds have anti-inflammatory, anti-pyretic and analgesic activity. Also included are claims for methods of treating inflammation using the carboxylic acid compounds of this invention.

3,759,949

PROCESS OF MANUFACTURING ORGANO-PHOSPHOROUS DERIVATIVES

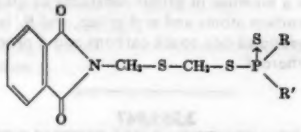
Llewellyn W. Fancher, Orinda, and Jules Kalbfeld, Pinole, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 868,580, Oct. 22, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,378

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 E **4 Claims**

A process of manufacturing organo-phosphorous derivatives is described herein. The process involves first forming a solution of sodium bisulfide in situ by reacting a sodium compound with hydrogen sulfide in the presence of a solvent. Then, a solution is formed consisting of tetrahydrofuran and N-halomethylphthalimide which is reacted with the sodium bisulfide solution to form N-mercaptomethylphthalimide. The N-mercaptomethylphthalimide is then isolated and reacted with a dialkylphosphorodithioic acid and an aldehyde to form a compound of the following formula:



wherein R and R′ can each be selected from a lower alkyl group having from 1 to 5 carbon atoms or a lower alkoxy group having from 1 to 5 carbon atoms.

3,759,950

2-PHENOXYALKANOIC ACID ESTERS

Norman H. Grant, Wynnewood, and Harvey E. Alburn, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 737,837, June 18, 1969. This application Sept. 20, 1971, Ser. No. 182,235

Int. Cl. C07d *27/10, 27/52*

U.S. Cl. 260—326 A **6 Claims**

This invention concerns 2-phenoxyalkanoic acid esters which are pharmacologically active as anticholesterol agents.

3,759,951

CARBANILATE DITHIOLANES AND DITHIANES

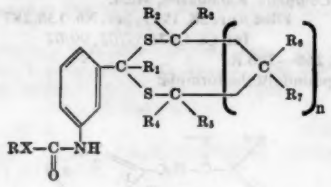
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,317

Int. Cl. C07d *71/00, 73/00*

U.S. Cl. 260—327 M **13 Claims**

Substituted carbanilate dithiolanes and dithiane compounds having the formula



in which R is lower alkyl; R_1, R_2, R_3, R_4, R_5, R_6 and R_7 each are independently selected from the group consisting of hydrogen and lower alkyl; X is selected from the group consisting of oxygen and sulfur; and n is 0 or 1 These compounds are useful as herbicides.

3,759,952

UREIDO DITHIOLANES AND DITHIANES

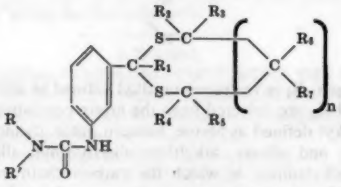
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,318

Int. Cl. C07d *71/00, 73/00*

U.S. Cl. 260—327 M **15 Claims**

Substituted ureido dithiolane and dithiane compounds having the formula



in which R is lower alkyl, R′ is selected from the group consisting of lower alkyl and hydrogen; R_1, R_2, R_3, R_4, R_5, R_6 and R_7 each are independently selected from the group consisting of hydrogen and lower alkyl; and n is 0 or 1. These compounds are useful as herbicides.

3,759,953

BENZOXANTHENE AND BENZOTHIOXANTHENE

Helmut Troster, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

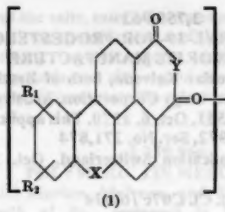
Filed Apr. 12, 1971, Ser. No. 133,351

Claims priority, application Germany, Apr. 14, 1970, P 20 17 764.4

Int. Cl. C07d *7/42, 65/16*

U.S. Cl. 260—328 **4 Claims**

Valuable benzoxanthene and benzothioxanthene dyestuffs of the general formula



(1)

in which X represents an oxygen or sulfur atom, Y represents an oxygen atom or a

group, wherein R stands for a hydrogen atom or an alkyl, cycloalkyl or aryl group which may be substituted, a heterocyclic radical, a hydroxyl or amino group, R_1 and R_2 each represent hydrogen atoms, halogen atoms, especially chlorine or bromine atoms, alkyl or alkoxy groups, and n stands for a number of 1 to 3, which dyestuffs are suitable for dyeing and printing of plastic materials and excellently suitable as fluorescing dyestuffs in the dyeing of condensation resins which when dyed are distinguished by excellent fastness to bleeding and good fastness to light.

3,759,954

DIEPOXIDES, PROCESSES FOR THEIR MANUFACTURE AND USE

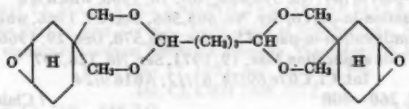
Hans Batzer, Arlesheim; Juergen Habermeier, Allschwil, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 8, 1971, Ser. No. 113,717

Int. Cl. C07d *15/04*

U.S. Cl. 260—340.7 **5 Claims**

Diepoxides manufactured by epoxidation of diacetals or diketals from Δ^3-cyclohexene-1,1-dimethanol or its homologues and dialdehydes or diketones which apart from the two aldehyde groups or keto groups only contain hydrocarbon radicals, for example the diepoxide of the formula



The new diepoxides couple good mechanical properties with a significantly higher heat distortion point according to Martens than the known epoxidised diacetals of similar constitution, in which the acetal groups are interrupted by an alkylene-oxyalkylene chain instead of by an alkylene chain which is free of ether oxygen.

3,759,955

PROCESS FOR INHIBITING DIKETENE POLYMERIZATION

Max LeRoy Jacobs, Livermore, Colo., and Buster Watson Higdon, Pampa, Tex., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 628,835, April 6, 1967, abandoned. This application Mar. 19, 1971, Ser. No. 126,301

Int. Cl. C07d *3/00*

U.S. Cl. 260—343.9 **3 Claims**

A process for inhibiting the polymerization of diketene in storage which comprises adding water to the diketene in amounts of from about 0.001 to about 2 weight percent.

3,759,956

BIS-TETRAHYDROPYRANYL SULFONES AND SULFOXIDES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 783,737, Dec. 13, 1968, Pat. No. 3,651,093. This application Dec. 20, 1971, Ser. No. 210,221

Int. Cl. C07d *7/46*

U.S. Cl. 260—345.9 **3 Claims**

Bis-tetrahydropyranyl sulfones and sulfoxides are prepared by oxidizing bis-tetrahydropyranyl sulfide with hydrogen peroxide.

3,759,957

ANTHRAQUINOID DYESTUFFS

Richard Peter; Hans-Joerg Angliker, and Angelo Della Casa, all of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 843,834, July 22, 1969, Pat. No. 3,663,577. This application Nov. 16, 1971, Ser. No. 199,344

Claims priority, application Switzerland, July 26, 1968, 11234/68

Int. Cl. C09b *1/22, 1/50*

U.S. Cl. 260—368 **4 Claims**

An anthraquinoid dyestuff which comprises at least one residue of an anthraquinoid disperse dyestuff and at least one residue of a disperse dyestuff of the styryl series.

3,759,958

ANTHRAQUINOID DYESTUFFS

Richard Peter; Hans-Joerg Angliker, and Angelo Della Casa, all of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 843,834, July 22, 1969, Pat. No. 3,663,577. This application Nov. 16, 1971, Ser. No. 199,343

Claims priority, application Switzerland, July 26, 1968, 11234/68

Int. Cl. C09b *1/22, 1/50*

U.S. Cl. 260—372 **4 Claims**

An anthraquinoid dyestuff which comprises at least one residue of an anthraquinoid disperse dyestuff and at least one residue of a disperse dyestuff of the styryl series.

3,759,959

ANTHRAQUINOID DYESTUFFS

Richard Peter; Hans-Joerg Angliker, and Angelo Della Casa, all of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 843,834, July 22, 1969, Pat. No. 3,663,557. This application Nov. 16, 1971, Ser. No. 199,345

Claims priority, application Switzerland, July 26, 1968, 11234/68

Int. Cl. C09b *1/32, 1/50*

U.S. Cl. 260—376 **5 Claims**

An anthraquinoid dyestuff which comprises at least one residue of an anthraquinoid disperse dyestuff and at least one residue of a disperse dyestuff of the styryl series.

3,759,960

NOVEL 16-METHYLENE-9β, 10α-STEROID COMPOUNDS, PHARMACEUTICAL PREPARATIONS WHICH CONTAIN THE NOVEL COMPOUNDS AS ACTIVE INGREDIENTS, AND METHODS OF PRODUCING THE SAID COMPOUNDS AND PREPARATIONS

Harmen Van Kamp, and Anna Maria DeWachter, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,720

Claims priority, application Netherlands, Mar. 4, 1970, 7003061

Int. Cl. C07c *169/66*

U.S. Cl. 260—397.4 19 Claims

The invention relates to novel 16-methylene-17α-acyloxy (or etherified hydroxy)-9β, 10α-steroid compounds of the pregnane series which have an exceptionally high endocrinological activity, such as a very strong progestational and anti-ovulatory activity. After the compounds have been worked up into pharmaceutical preparations they may be used inter alia as contraceptives or for maintaining pregnancy. Highly active substances according to the invention are, for example, 6-chloro-16-methylene-17α-hydroxy-9β, 10α-pregna-4,6-diene-3,20-dione 17-acetate and 6-fluoro-16-methylene-17α-hydroxy-9β, 10α-pregna-4,6-diene-3,20-dione 17-acetate.

3,759,961

PROCESS FOR ETHINYLATING 17-KETOSTEROIDS

Reinhold Wieske, and Paul-Eberhard Schulze, both of Berlin, Germany, assignors to Sckering Aktiengesellschaft, Berlin/Bergkamen, Germany

Filed June 3, 1971, Ser. No. 149,808

Claims priority, application Germany, June 13, 1970, P 20 30 056.5

Int. Cl. C07c *167/20*

U.S. Cl. 260—397.4 6 Claims

Process for preparing 17α-ethinyl-17β-hydroxysteroids characterized by the partial formula

(I)

wherein R_1 is lower alkyl by ethinylating 17-ketosteroids characterized by the partial formula

(II)

wherein R_1 has the same meaning as above, with acetylene in the presence of an alkali alcoholate of a tertiary alcohol and in the presence of a solvent in the absence of any tertiary alcohol.

3,759,962

NEW 6 ALPHA-METHYL-19-NOR-PROGESTERONE AND A PROCESS OF ITS MANUFACTURE

Georg Anner, and Jaroslav Kalvoda, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 78,581, Oct. 6, 1970. This application July 14, 1972, Ser. No. 271,874

Claims priority, application Switzerland, Oct. 10, 1969, 15272/69

Int. Cl. C07c *169/34*

U.S. Cl. 260—397.4 1 Claim

The present invention provides the new 3,20-dioxo-6α-methyl-17α-caproyloxy-19-nor-Δ^4-pregnene.

It may be used as gestagen and for fertility control.

3,759,963

WATER INSOLUBLE ANTHRAQUINONE DYES FOR CELLULOSIC AND SYNTHETIC FIBERS

Thomas Michael McGuire, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 30, 1971, Ser. No. 167,828

Int. Cl. C09b *1/42*

U.S. Cl. 260—377 7 Claims

Essentially water insoluble, non-vattable, blue to green 1-nitroaroylamino-5,8-di(N-substituted)aminoanthraquinone dyes, for example, 1-(p-nitrobenzamide)-5,8-bis(p-toluidino)-anthraquinone, useful for dyeing water swellable cellulosic fibers, for example, cotton fibers, or synthetic fibers, for example, polyester fibers, or blends or mixtures thereof, said dyed fibers being fast to light, washing, drycleaning and sublimation.

3,759,964

DIHALOMETHYLENE SUBSTITUTED ESTERS AND DERIVATIVES

John B. Siddall, Palo Alto, Calif., and Jean Pierre Calame, Locarno, Switzerland, assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 843,818, July 22, 1969, Pat. No. 3,641,558, which is a continuation-in-part of Ser. No. 800,266, Feb. 18, 1969, which is a continuation-in-part of Ser. No. 618,351, Feb. 24, 1967, which is a continuation-in-part of Ser. No. 579,490, Sept. 15, 1966, which is a continuation-in-part of Ser. No. 590,195, Oct. 28, 1966, which is a continuation-in-part of Ser. No. 592,324, Nov. 7, 1966, which is a continuation-in-part of Ser. No. 594,664, Nov. 16, 1966, which is a continuation-in-part of Ser. No. 605,566, Dec. 29, 1966, which is a continuation-in-part of Ser. No. 605,578, Dec. 29, 1966. This application Mar. 19, 1971, Ser. No. 126,297

Int. Cl. C07c *69/74, 61/12*; A01n *9/24*

U.S. Cl. 260—408 7 Claims

Novel aliphatic hydrocarbon esters, acids and alcohols having a backbone of at least 12 carbon atoms, a lower alkyl group at C-3, C—7 and C—11 and unsaturation or saturation at C—2,3, C—6,7 and/or C—10, 11 which are substituents with, for example, halo, hydroxy, methylene, oxido, dihalomethylene, and the like, and the esters and ethers of said hydroxy substituent useful as arthropod maturation inhibitors.

3,759,965

PGA

Philip F. Beal, III, and John E. Pike, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 82,121, Oct. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 520,876, Jan. 17, 1966, abandoned, which is a continuation-in-part of Ser. No. 480,107, Aug. 16, 1965, abandoned. This application June 28, 1971, Ser. No. 157,713

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 D 6 Claims

This invention is a group of novel prostanoic acid derivatives, namely prostaglandin A_2 (PGA_2), prostaglandin A_3 (PGA_3), and 13,14-dihydroprostaglandin A_1 (13,14-dihydro-

PGA_1), and the salts, esters, formates and alkanoates of those. These novel compounds are useful as antisecretory agents, vasodepressors, oxytocic agents, and abortifacients. These novel compounds are also useful to manage cases of renal disfunction and to regulate the menstrual cycle of women.

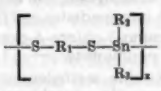
3,759,966

POLYMERIC TIN MERCAPTIDES

Paul Daniel Morton, Malvern, and Bernard Buchholz, Blue Bell, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 25, 1971, Ser. No. 146,811
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 19 Claims

Polymeric tin mercaptides of the structure:



where R_1 is the hydrocarbon residue of a cycloaliphatic dimercaptan, R_2 and R_3 are alkyl groups of four to about 10 carbon atoms, and x is an integer from about 2 to about 10, are complexed with a phenolic antioxidant. The resultant complexes are useful as non-toxic thermal stabilizers for polymers such as polyvinyl chloride.

3,759,967

SILICON DERIVATIVES OF FERROCENE

Gilbert P. Sollott, Plymouth Meeting, and William R. Peterson, Levittown, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 12, 1968, Ser. No. 759,492
Int. Cl. C07f 15/02, 7/08
U.S. Cl. 260—439 CY 1 Claim

Silyation of ferrocene in $AlCl_3$-catalyzed reactions with aminosilanes, chlorosilanes or aminochlorosilanes, constituting successful use of halosilanes in reactions analogous to Friedel-Crafts alkylation, and providing a novel, facile route to silicon compounds of ferrocene.

3,759,968

SILYL MALEATES AND POLYSILOXANE MALEATES

Abe Berger, and Terry G. Selin, both of Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed May 17, 1971, Ser. No. 144,306
Int. Cl. C07f 7/08, 7/12
U.S. Cl. 260—448.2 Q 12 Claims

Silyl maleates and fumarates and polysiloxane maleates and fumarates useful as glass sizing agents are prepared in accordance with the present invention. The silyl maleates and polysiloxane maleates and fumarates are formed by reacting either the cis- or trans- 1,2-bis-carbalkoxyethylenes having an unsaturated alkenyl group therein with a hydrogen silane of hydrogen polysiloxane in the presence of a platinum catalyst.

3,759,969

ORGANOSILICON COMPOUND WITH ISOTHIOCYANATE SUBSTITUENT BONDED THROUGH DIVALENT BRIDGE

Abe Berger, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 796,647, Jan. 31, 1969, Pat. No. 3,646,089. This application June 9, 1971, Ser. No. 151,549
Int. Cl. C07f 7/08, 7/18
U.S. Cl. 260—448.2 N 3 Claims

A new class of organosilicon compounds having an isothiocyanate group bonded to the silicon atom through an alkylene bridge of at least three carbon atoms, or an alkylene bridge having sulfur oxygen or nitrogen linkages therein is made by reacting the corresponding amino alkyl-substituted organosilicon compound with carbon disulfide and a dialkyl carbodiimide. The compositions are extremely useful where base cleavage of the silicon atom from the isothiocyanate substituted group is a problem, such as glass sizing where the glass is basic and the formation of polyurethanes where a base catalyst is implied.

3,759,970

THERMAL STABILIZERS FOR SILICONE FLUIDS

A. D. Britt, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 12,456, Feb. 18, 1970, abandoned. This application Dec. 10, 1971, Ser. No. 206,871
Int. Cl. C09k 3/00; C07f 7/08
U.S. Cl. 260—448.2 R 5 Claims

High temperature stable polysiloxane fluids are produced by reacting the polysiloxane with a fluorinated aromatic amide. About 1.0 percent by weight of the amide is used with the polysiloxane to produce a stabilized fluid requiring up to 6 hours before gelation at 400°C. Such stabilized polysiloxanes are useful in hydraulic systems which are subjected to high temperature environments.

3,759,971

PURIFICATION OF ISOCYANATES

Michael Cuscurida, Austin, and James Edward Kmiecik, Houston, both of Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Jan. 20, 1971, Ser. No. 108,146
Int. Cl. C07c 119/04
U.S. Cl. 260—453 SP 7 Claims

Synthetic metal silicates greatly reduce the amount of hydrolyzable chlorides and acids present in isocyanates. Isocyanates are useful, for example, in forming polyurethane materials.

3,759,972

FUNGICIDAL CARBONATES AND THIOLOCARBONATES OF DIHALODINITRO-PHENOLS

Max Pianka, St. Albans, England, assignor to The Murphy Chemical Company Limited, St. Albans, England

Continuation of Ser. No. 662,910, Aug. 24, 1967, abandoned. This application Jan. 14, 1971, Ser. No. 106,551
Claims priority, application Great Britain, Sept. 9, 1966, 40,426/66; Sept. 9, 1966, 40,427/66
Int. Cl. C07c 79/28, 154/00; A01n 9/20
U.S. Cl. 260—463 3 Claims

Carboxylate, carbonate and thiolocarbonate esters of dichloro- and dibromodo-nitrophenols, particularly those in which the halogen atoms are in the 2-and 5-positions and the nitro groups are in the 4- and 6-positions. The compounds have activity against fungi which are plant pathogens and they have a very low degree of mammalian toxicity.

3,759,973

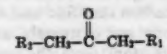
MANUFACTURE OF 2,6-DIALKYL-3-SUBSTITUTED-6-(BETA-CYANOETHYL-CYCLOHEXENE-(2)-ONE AND PRODUCTS

Martin Cherubim, Rheinkamp-Erick, and Faisal Abo Dagga, Rheinkamp-Utfort, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Mar. 3, 1971, Ser. No. 120,728
Claims priority, application Germany, Mar. 4, 1970, P 20 10 124.0
Int. Cl. C07c 121/48
U.S. Cl. 260—464 4 Claims

2,6-dialkyl-3-amino-6-(beta-cyanoethyl)-cyclohexene-(2)-one (I) and 2,6-dialkyl-3-hydroxy-6-(beta-carboxyethyl)-

cyclohexene-(2)-one (II) and manufacture comprising contacting a dialkyl ketone of the general formula:



where R_1 and R_2 are alkyl of from one to five carbons with acrylonitrile in the presence of an alkaline catalyst and inert solvent to form I and contacting I with an aqueous metal hydroxide to form II.

3,759,974

SUBSTITUTED 4-CYANO-4-PHENYL-AMINOCYCLOHEXANES

Hans-Joerg Treiber, Bruehl, and Frank Zimmermann, Mannheim, both of Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen/Rhine, Germany

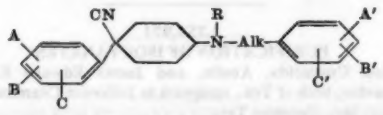
Filed Sept. 9, 1969, Ser. No. 856,498

Claims priority, application Germany, Sept. 10, 1968, P 17 93 383.4

Int. Cl. C07c *121/64*

U.S. Cl. 260—465 E 29 Claims

Basically substituted 4-cyano-4-phenyl-aminocyclo-hexanes of the general formula



wherein A, B, C, A′, B′, C′ are each hydrogen, halogen, trifluoromethyl, lower alkyl or lower alkoxy; R is hydrogen or lower alkyl; and Alk is straight or branched chain lower alkylene or hydroxy lower alkylene, their acid addition salts and their pharmaceutical composition. The compounds and compositions are valuable blood pressure depressants, which also exhibit spasmolytic, neuroleptic and coronary dilating properties.

3,759,975

DICHLOROMETHYLENE CARBAMIC ACID ESTERS AND THIOESTERS

Wolfgang Reusche, Leverkusen-Schlebusch, and Hans Holtschmidt, Leverkusen-Steinbuchel, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 12, 1969, Ser. No. 884,717

Claims priority, application Germany, Jan. 8, 1969, P 19 00 755.7

Int. Cl. C02c *125/06*

U.S. Cl. 260—465 D 5 Claims

Dichloromethylenecarbonic acid esters and -thioesters are obtained by reacting dichloromethylenecarbamic acid chloride with alcohols, thioalcohols, phenols or thiophenols at a temperature range of from −50° to + 100° C. The compounds obtained by this process show pesticidal activity. They can, furthermore, be used for the preparation of the corresponding isocyanates.

3,759,976

NITRILE COMPOUNDS

Christian Jutz, Munich, Germany, and Werner Mueller, Germantown, Pa., assignors to Byk-Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Germany

Division of Ser. No. 674,695, Sept. 26, 1967, Pat. No. 3,523,119. This application May 22, 1970, Ser. No. 38,646

Int. Cl. C07c *121/42*, *121/52*

U.S. Cl. 260—465 E 7 Claims

An improved process of producing known 5-pyrimidine carboxylic acids which have in 4-position a basic group, such as the 2,3-dimethyl anilino, 3-trifluoro methyl anilino, dimethylamino, anilino, N-methyl anilino, and other groups, by using the readily available malonic acid dinitrile or dimethylamino methylene malonic acid dinitrile and dimethylformamide chloride as starting reactants, reacting said reactants at a temperature between 10°C. and 110°C., preferably in the presence of an inert solvent to yield the heretofore unknown 1-dimethylamino-3-chloro-4-cyano-2-azapentadiene-5-dimethyliminium chloride which is preferably purified by conversion into the perchlorate, replacing the chlorine atom in 3-position by an amino group to yield the heretofore unknown corresponding 1-amino-1-dimethylamino methylene amino-3-dimethyliminium-2-cyano propene-(1) compound, causing ring closure to the corresponding 4-amino-5-cyano pyrimidine compound by reaction with ammonia, and saponifying the cyano group to the carboxyl group. The final products are known antiphlogistic, analgesic, and antirheumatic drugs.

Examples of such intermediates and final products are:

a. 1-Dimethylamino-3-chloro-4-cyano-2-azapentadiene-5-dimethyliminium perchlorate → 1-(3′-trifluoro methyl anilino)-1-dimethylamino methylene amino-3-dimethyliminium-2-cyano propene-(1) perchlorate → 4-(3′-trifluoro methylanilino)-5-cyano pyrimidine → 4-(3′-trifluoro methyl anilino) pyrimidine-5-carboxylic acid;

b. 1-Dimethylamino-3-chloro-4-cyano-2-azapentadiene-5-dimethyliminium perchlorate → 1-(2′,3′-dimethylanilino)-1-dimethylamino methylene amino-3-dimethyliminium-2-cyano propene-(1) perchlorate → 4-(2′,3′-dimethyl anilino)-5-cyano pyrimidine → 4-(2′,3′-dimethylanilino)pyrimidine-5-carboxylic acid.

In a similar manner there are obtained 4-dimethylamino-5-cyano pyrimidine 4-dimethylamino pyrimidine-5-carboxylic acid or 1-(N-methylanilino)-1-dimethylamino methylene amino-3-dimethyliminium-2-cyano propene-(1) perchlorate→ 4-(N-methyl anilino)-5-cyano pyrimidine → 4-(N-methyl anilino) pyrimidine-5-carboxylic acid.

The process has the advantage over known processes of producing the respective pyrimidine-5-carboxylic acids that the starting materials are readily available, that the reaction steps are carried out in a simple manner and without any considerable expenditures, and that the resulting intermediates are obtained in a pure state and a high yield.

3,759,977

METHOD FOR PREPARING TETRA-N,N,N′,N′-(2-HYDROXYETHYL)-ETHYLENEDIAMINE TETRANITRATE AND SALTS THEREOF

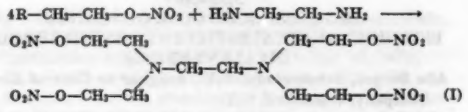
Raffaele Pessina, Via De Ambrosis 6, Novi Ligure, Italy

Filed Oct. 7, 1971, Ser. No. 187,541

Int. Cl. C07c *77/02*

U.S. Cl. 260—467 5 Claims

This invention relates to a method for preparing tetra-N,N,N′,N′-(2-hydroxyethyl)-ethylenediamine tetranitrate of the general formula (I), and salts thereof, wherein the reaction is provided between a haloethyl-nitrate and ethylenediamine according to the scheme:



wherein R is a halogen, both in the presence and in the absence of a solvent, at a temperature between −5°C and 100°C.

3,759,978
5,6-TRANS PGE_2

Frank H. Lincoln, Jr., Portage, and John E. Pike, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 72,511, Sept. 15, 1970, abandoned. This application June 28, 1971, Ser. No. 157,651

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D **15 Claims**

5,6-Trans-postaglandins E_2, $F_{2\alpha}$, $F_{2\beta}$, A_2 and B_2 are disclosed. These are useful for the same pharmacological purposes as the known prostaglandins PGE_2, $PGF_{2\alpha}$, $PGF_{2\beta}$, PGA_2, and PGB_2.

3,759,979
AROMATIC AMINO ACIDS AND ESTERS THEREOF

Laszlo Beregi, Boulogne S/Seine; Pierre Hugon, Rueil-Malmaison, and Jean-Claude LeDouarec, Suresnes, all of France, assignors to Science Union et Cie, Suresnes, France

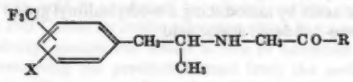
Filed Feb. 13, 1970, Ser. No. 11,330

Claims priority, application Great Britain, Feb. 27, 1969, 10,617/69

Int. Cl. C07c *101/08*

U.S. Cl. 260—471 A **3 Claims**

Amino acids and their derivatives of the formula:



wherein

X is hydrogen or halogen,

R is

hydroxyl

lower alkyloxy,

wherein R_1 and R_2 are hydrogen, lower alkyl, phenyl, pyridyl, halophenyl, halopyridyl, lower alkylphenyl, lower alkylpyridyl, lower alkyloxyphenyl, lower alkyloxypyridyl, trifyloromethylphenyl, trifluoromethylpyridyl; R_3 is $CONH_2$ provided that R_1 is hydrogen, and $R_1 + R_2$ together with the nitrogen atom to which they are attached are morpholinyl, pyrrolidinyl, piperidyl, indolinyl or isoindolinyl; or

wherein R_3 and R_4 are hydrogen or lower alkyl.

These compounds possess anorezigenic, analgesic and lipid metabolism regulating properties.

3,759,980
SALICYLATES

William E. Rosen, Summit, and Philip A. Berke, Milburn, both of N.J., assignors to Stockton Chemicals, Inc., Union, N.J.

Filed May 26, 1969, Ser. No. 827,893

Int. Cl. C07c *69/86*

U.S. Cl. 260—480 **5 Claims**

A complex consisting essentially of $(R_1,R_2,R_3,R_4N^+)_n(Mg^{++})An1\ (ArCOO^-)\ 2\ (Ar\ COO^-)\ 3\ (X^-)\ 4\ (H_2O)\ 5$ wherein

R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, alkyl of one to 20 carbon atoms, hydroxyalkyl of one to 20 carbon atoms, carboxyalkyl of one to 20 carbon atoms and aralkyl of 1 to 20 carbon atoms in the alkyl moiety,

Ar and Ar' are an aromatic monocycle or substituted aromatic monocycle,

X is sulfate, chloride or substituted carboxylate,

n, n^1 and n^2 are integers of at least one, and

n^3, n^4 and n^5 are zero or an integer of at least 1, provided that when $(R_1, R_2, R_3, R_4 N^+)_n$ is choline, $(Mg^{++})_n1$ is magnesium, $(ArCOO^-)_n2$ is salicylate and n^3 is zero, $(X^-)_n4$ is not sulfate, is produced by reacting a salicylate compound with a magnesium salt. The complexes produced exhibits analgesic, anti-pyretic, anti-inflammatory and anti-rheumatic acitivity. A particularly valuable compound is choline magnesium salicylate.

3,759,981
ESTERS OF PERFLUOROALKYL TERMINATED ALKYLENE THIOALKANOIC ACIDS

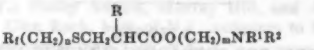
Robert Bonner Hager, Collegeville, and Gerald Joseph Walter, King of Prussia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 20, 1971, Ser. No. 145,556

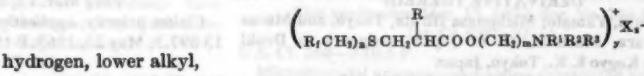
Int. Cl. C07c *149/16*

U.S. Cl. 260—481 R **7 Claims**

Sulfur-containing, perfluoroalkyl amines and their quaternary salt and amine oxide derivatives having outstanding surfactant properties are provided having the structures



and



where R_f is straight or branched-chain perfluoroalkyl, R is hydrogen or methyl, R^1 and R^2 are independently hydrogen or lower alkyl, n is an integer of 1 to 3, m is an integer of 2 to 4; X is an anion, y is an integer equal to k, the valence of X; z is 0 or 1, and when z is 1, then R^3 is hydrogen, lower alkyl or CH_2COOH; and when z is 0, then R^3 is oxygen, CH_2COO^-, $CH_2CH_2COO^-$ or $CH_2CH_2CH_2SO_3^-$.

3,759,982
ANIONIC COMPLEXES OF MONOMERIC EMULSION STABILIZERS

Carlos M. Samour, Wellesley, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed May 26, 1970, Ser. No. 40,705

Int. Cl. C07c *69/40*

U.S. Cl. 260—485 J **3 Claims**

Anionic complexes of quaternary ammonium salts having an ethylenically-unsaturated radical and a lipophilic radical covalently linked to the quaternary nitrogen atom are disclosed. These anionic complexes are useful as monomeric emulsion stabilizers.

3,759,983

COUPLING OF ORGANIC COMPOUNDS

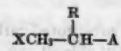
Olav T. Onsager, Waldwick, N.J., assignor to Halcon International Inc., New York, N.Y.

Division of Ser. No. 872,395, Oct. 29, 1969, Pat. No. 3,644,477, and a continuation-in-part of Ser. No. 801,757, Feb. 24, 1969, Pat. No. 3,644,474, and a continuation-in-part of Ser. No. 801,758, Feb. 24, 1969, Pat. No. 3,644,473, and a continuation-in-part of Ser. No. 835,722, June 23, 1969, Pat. No. 3,644,476. This application Dec. 9, 1971, Ser. No. 206,542

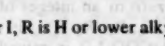
Int. Cl. C07c *55/14, 69/44*

U.S. Cl. 260—485 R **13 Claims**

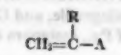
A process for the reductive coupling of a compound having the formula



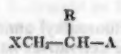
wherein X is Cl, Br, or I, R is H or lower alkyl, and A is



or —$CONR_2$, using as reducing agent a zero valent reducing metal or compound thereof in combination with a promoter salt. The invention especially relates to an overall process for the production of linear dimers of compounds of the formula



by first hydrohalogenation to



followed by the reductive coupling.

3,759,984

PROCESS FOR PREPARING SUCCINIC ACID OR DERIVATIVE THEREOF

Chiyuki Fujii, Yamato; Michimasa Hirata, Tokyo, and Masao Ogasawara, Machida, all of Japan, assignors to Denki Kagaku Kogyo K.K., Tokyo, Japan

Filed Dec. 10, 1971, Ser. No. 206,867

Claims priority, application Japan, Dec. 24, 1970, 45/117292

Int. Cl. C07c *69/40*

U.S. Cl. 260—485 R **4 Claims**

Succinic acid or derivative thereof is prepared by reacting ethylene with carbon monoxide in the presence of a palladium compound.

3,759,985

METHOD FOR PREPARING SALTS OF SULFOALKYL ESTERS

Shogo Nukina, Osaka; Yoshihiro Hayashi, and Kyohei Yamada, both of Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jan. 28, 1971, Ser. No. 110,650

Claims priority, application Japan, Jan. 28, 1970, 45/7510

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **4 Claims**

Salts of sulfoalkyl acrylate or salts of sulfoalkyl methacrylate can be produced in high purity by reacting salts of acrylic acid or salts of methacrylic acid with 1,3-propane sultone or 1,4-butane sultone in the presence of acrylic acid or methacrylic acid.

3,759,986

ESTERS OF 2,2-DIMETHYL-5-(ARYLOXY)-1-PENTANOLS

Paul E. Creger, and Winifred A. Neuklis, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Division of Ser. No. 24,000, March 30, 1970, Pat. No. 3,707,566. This application Aug. 25, 1972, Ser. No. 283,863

Int. Cl. C07c *67/00, 69/14, 67/74, 69/78*

U.S. Cl. 260—488 CD **3 Claims**

Ester derivatives of 2,2-dimethyl-5-(2,5-xylyloxy)-1-pentanol and 2,2-dimethyl-5-(3,5-xylyloxy)-1-pentanol. These compounds lower serum triglyceride levels. They can be produced by reacting the 1-pentanol compounds with an esterifying agent.

3,759,987

PREPARATION OF 5-FLUORO-2-METHYL-1-(P-METHYLSULFINYLBENZYLIDENE)-3-INDENYL ACETIC ACID

John B. Conn, and Frederick W. Bollinger, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 1, 1970, Ser. No. 33,974

Int. Cl. C07c *147/00*

U.S. Cl. 260—515 A **1 Claim**

Process for preparing 1-(p-methylsulfinylbenzylidene)-3-indenyl acetic acids by introducing a methylsulfinyl group into a 1-benzylidene-3-indenyl acetic acid.

3,759,988

PROCESS FOR CONTINUOUSLY PRODUCING SORBIC ACID BY CONVERTING KETENE WITH CROTONALDEHYDE

Gerhard Kunstle, and Hellmuth Spes, both of Burghausen-Obb., Germany, assignors to Wacker-Chemie G. m.b.H., Munich, Germany

Filed Mar. 13, 1970, Ser. No. 19,206

Claims priority, application Germany, Mar. 14, 1969, P 19 13 097.3; May 23, 1969, P 19 26 538.4

Int. Cl. C07c *51/00*

U.S. Cl. 260—526 N **10 Claims**

Process for continuously producing sorbic acid by converting ketene with crotonaldehyde in the presence of catalysts, and converting the produced polyester into sorbic acid by saponification. In performing the process we convert ketene with crotonaldehyde containing 0.01 to 1% of a sterically hindered phenol as a stabilizer against oxidation, in the presence of tetraalkyl titanates or their condensation products and of a co-catalyst containing one or several compounds, at temperatures from 60° to 102° C, preferably 70° – 90° C, and we convert the resulting polyester containing the catalyst and co-catalyst, and freed from crotonaldehyde, into sorbic acid by acid hydrolysis, by,

a. using for saponification a 20.2 to 25 percent hydrochloric acid, subsequently
b. reheating the hydrolysis mixture, consisting of raw sorbic acid and hydrochloric acid, for about 1 to 5 hours to a temperature from 70° and 90° C, and after cooling we separate it in the known manner into raw sorbic acid and hydrochloric acid, and the hydrochloric acid is recirculated without purification,
c. removing the hydrogen chloride still present in the raw sorbic acid in the form of hydrochloric acid after separation — by washing with water down to a residue of about 0.2 to 0.5 percent, and neutralizing it in part or entirely.

3,759,989

BIS(P-PHENOXYPHENYL)IODONIUM SALTS

Zdravko Jezic, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1970, Ser. No. 86,387
Int. Cl. C07c *43/28*
U.S. Cl. 260—539 A 5 Claims

A 4-(diacetoxyiodo)diphenyloxide is condensed with a diphenyloxide in the presence of a condensing agent such as trichloroacetic acid or trifluoroacetic acid to form a new bis(p-phenoxyphenyl)iodonium trifluoroacetate or trichloroacetate salt. The 4-(diacetoxyiodo)diphenyloxide and the diphenyloxide reagents each may have a halo, a loweralkyl, or a loweralkoxy substituent on their unsubstituted phenyl nucleus to give symmetrical and unsymmetrical bis(p-phenoxyphenyl)iodonium trichloroacetates or trifluoroacetates. Such salts can be converted to other salt forms in usual ways. The novel products have antimicrobial activity.

3,759,990

FORMIC ACID SYNTHESIS

Allen N. Webb, Wappingers Falls, N.Y., and Bernardus Cornelis Lippens, Zomergem, Belgium, assignors to S. A. Texaco Belgium N.V., Brussels, Belgium

Filed Sept. 15, 1971, Ser. No. 180,830
Int. Cl. C07c *51/00*
U.S. Cl. 260—542 3 Claims

Formic acid is produced by passing carbon monoxide at about 200°C over an oxidic substrate which has a surface layer of hydroxyl groups but which is free of adsorbed water and then removing the product formed from the surface of the substrate. Such removal can be effected by extraction with water or with aqueous alkaline solutions and the substrate can be recycled for the production of additional formic acid.

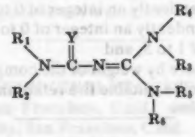
3,759,991

THIOCARBAMYLATED GUANIDINES - GROWTH REGULANT

Alfred F. Marks, Trenton, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed May 4, 1970, Ser. No. 34,590
Int. Cl. C07c *127/00*
U.S. Cl. 260—552 R 2 Claims

Carbamylated and thiocarbamylated guanidines have demonstrated effective growth regulating activity. Such compounds are represented by the following structure:



where R_1–R_6 are each selected from a group consisting of hydrogen, C_1–C_{10} alkyl, C_3–C_{10} alkenyl, C_3–C_{10} cycloalkyl group; phenyl, naphthyl. These groups may be optionally substituted with C_1–C_6 akyl, chloro or bromo. R_1 and R_2 and/or R_3 and R_4 and/or R_5 and R_6 together can be a carbocyclic ring containing one or more heteroatoms such as N or S; and Y is either O or S.

3,759,992

UREA SYNTHESIS

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y.

Filed June 29, 1970, Ser. No. 50,777
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 A 11 Claims

Ammonia, CO_2 and ammonium carbamate are reacted in a reactor at elevated temperature and pressure to form urea. From 10 to 100 percent of the CO_2 fresh reactor feed stream, which is substantially equivalent to the stoichiometric net amount of urea formed in the reactor, is reacted with NH_3 at 10 – 670 psia to form an aqueous ammonium carbamate solution, and this solution is charged to the reactor to form urea.

3,759,993

FLUOROMETHANESULFONIC ACID DERIVATIVES

Jerry E. Robertson, North Oaks, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Sept. 27, 1971, Ser. No. 184,229
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 A 6 Claims

The compounds disclosed are the amphoteric compound 2-hydroxy-5-[1-hydroxy-2-(4′-methoxyphenethylamino)propyl]-fluoromethanesulfonanilide and its acid addition and metal salts. These compounds have physiological activity, including significant insecticidal activity evinced as activity against mosquito larvae.

3,759,994

1-SUBSTITUTED BIGUANIDES

Julius Diamond, Lafayette Hill; George H. Douglas, Paoli, and Bernard J. Burns, Philadelphia, all of Pa., assignors to William H. Rorer, Inc., Ft. Washington, Pa.

Division of Ser. No. 89,005, Nov. 12, 1970, abandoned. This application Apr. 27, 1972, Ser. No. 248,298
Int. Cl. C07c *129/08*
U.S. Cl. 260—565 9 Claims

Novel 1-aryl and aralkyl biguanide compounds have been prepared. The compounds of this invention possess useful gastric anti-secretory and spasmolytic properties. Compounds of this type which also display anti-hypertensive and CNS depressant properties are also disclosed.

3,759,995

N-(NONACHLOROBIPHENYL)AMINOPROPYL-N′-DIMETHYLAMINE

John J. Merianos, Jersey City, N.J.; Edward Griffin Shay, Suffern, N.Y.; Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Division of Ser. No. 883,636, Dec. 9, 1969, Pat. No. 3,663,620. This application Mar. 15, 1972, Ser. No. 235,064
Int. Cl. C07c *91/16*
U.S. Cl. 260—570.5 P 1 Claim

Microbiocidal ammonia and amino substituted halogenated biphenyls, as well as the nitrogen derivatives thereof such as quaternary ammonium compounds, amine oxides, imidazolines, amides, enamines, ampholytes, and the like.

The ammonia and amino halobiphenyls are prepared by reacting the ammonia or the amine and the halobiphenyl reactants in such a manner that the ratio of amine to halobiphenyl is preferably limited to between two and five mols of amine to each mol of halobiphenyl.

3,759,996

PROCESS FOR DIMERIZING DIARYLAMINES

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 13, 1971, Ser. No. 106,248
Int. Cl. C07c *87/64*
U.S. Cl. 260—576 9 Claims

Dimers of diarylamines are prepared by a process comprising treating a diarylamine-perchlorate salt with an oxidizing agent in an acidic medium. Exemplary of the products obtained is 4,4′-dianilino-1,1′-binaphthyl, which is made by treating N-phenyl-α-naphthylamine-perchlorate with chromium trioxide in acetic acid and water. The products thus produced are useful antioxidants in lubricants.

3,759,997

DEALKYLATION OF N-ALKYL AROMATIC AMINES

John P. Napolitano, 2444 Clawson, Royal Oak, Mich.

Filed Feb. 14, 1969, Ser. No. 799,522
Int. Cl. C07c *85/00*
U.S. Cl. 260—578 6 Claims

Aromatic amines mono-substituted on the amino nitrogen atom with a non-aromatic hydrocarbon substituent such as N-ethyl aniline are converted to primary aromatic amines by removal of the non-aromatic hydrocarbon substituent at a temperature of 275°–400°C in the presence of an aluminum anilide catalyst.

3,759,998

2,2-BIS (DIFLUORAMINO)-5-FLUORO-5,5-DINITRO-1-PENTANOL

Clifford L. Coon, Fremont; Marion E. Hill, Palo Alto, and Donald L. Ross, Menlo Park, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 10, 1969, Ser. No. 866,437
Int. Cl. C07c *87/22*, *91/00*
U.S. Cl. 260—584 R 4 Claims

2,2-bis (difluoramino)-5-fluoro-5,5-dinitro-1-pentanol having plasticizer properties for double-base propellants is synthesized by reacting 2,2-bis (difluoramino)-5-fluoro-5,5-dinitro-1-pentyl trifluoracetate with methanol.

3,759,999

METHOD OF PURIFYING ACIDIC COMPONENTS OF A HOP EXTRACT

William C. Herwig, Milwaukee, and Donald H. Westermann, Brookfield, both of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Filed Sept. 22, 1967, Ser. No. 669,947
Int. Cl. C07c *45/24*
U.S. Cl. 260—586 R 6 Claims

A method for separating isohumulones from lupulones and residual hop constituents as contained in e.g., an isomerized hop extract, by means of a strongly basic ion exchange resin.

3,760,000

PREPARATION OF PHOSPHINE OXIDES BY CATALYTIC OXIDATION OF TERTIARY PHOSPHINES

John D. Curry, Oxford, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Mar. 15, 1971, Ser. No. 124,452
Int. Cl. C07f *9/50*
U.S. Cl. 260—605.6 P 7 Claims

Process for preparing trialkyl and triaryl phosphine oxides employing zero-valent palladium complexes of ditertiary phosphines as catalysts. The resulting phosphine oxides are useful as surfactants and in skin preparations.

3,760,001

PRODUCTION OF TRIALKYLPHOSPHINES

Horst Staendeke, Bruhl, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Mar. 31, 1972, Ser. No. 239,922
Claims priority, application Germany, Apr. 3, 1971, P 21 16 439.6
Int. Cl. C07f *9/50*
U.S. Cl. 260—606.5 P 19 Claims

Production of trialkyphosphines of the general formula R_3P, in which R stands for alkyl groups having from 1 to 3 carbon atoms. In a first step a vaporous or gaseous mixture of phosphorus and an alkyl halide is passed in the absence of oxygen or air and at a temperature between 280° and 420°C, over an active carbon catalyst, the resulting gaseous reaction mixture is subjected to fractional condensation so as to isolate monoalkylhalogenophosphine, dialkylhalogenophosphine and a two layer-forming mixture of trialkylphosphonium halide and unreacted phosphorus therefrom, the trialkylphosphonium halide is decanted and, in a second step an aqueous alkali is added to the trialkylphosphonium halide so as to produce trialkylphosohine therefrom.

3,760,002

POLYHALO DISULFIDE ALCOHOLS AND DERIVATIVES

Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Chemagro Corporation, Kansas City, Mo.

Division of Ser. No. 757,487, Sept. 4, 1968, Pat. No. 3,641,109, which is a continuation-in-part of Ser. No. 560,125, June 24, 1966, abandoned.
Filed Sept. 9, 1969, Ser. No. 856,501
Int. Cl. C07c *149/12*
U.S. Cl. 260—608 11 Claims

Compounds are prepared having one of the formulae

(1) $A—SSCH_2CHOH$ with CH_2OH

and

(2) $B—SSCH_2CH_2OH$

where A is di to tetrahaloethyl or di to trihalovinyl and B is di to trihalovinyl and all halogen atoms have an atomic weight of 35 to 80. The compounds are useful as fungicides, desiccants and nematocides and to some extent as herbicides.

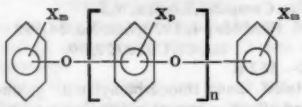
3,760,003

HALOGENATED POLYPHENYL ETHERS

Arthur A. Asadorian, Midland, Mich.; Horst G. Langer, Wayland, Mass., and Jeffrey A. Funsher, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1970, Ser. No. 77,704
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 R 3 Claims

Halogenated polyphenyl ethers having the general formula



wherein:
each X is independently Cl or Br,
each *m* is independently an integer of 0 to 5,
each *p* is independently an integer of 0 to 4,
n is an integer of 1 to 5, and
50 percent of more by weight of the compound is halogen have been found to be suitable fire retardants for polyester.

3,760,004

PRODUCTION OF DERIVATIVES OF OMEGA-HYDROXYTIGLALDEHYDE

Herwig Freyschlag, Ludwigshafen, Rhine; Fritz Stolp, Limburgerhof, Upper Palatine; Werner Reif, and Horst Pommer, both of Ludwigshafen, Rhine, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Continuation-in-part of Ser. No. 390,714, Aug. 19, 1964, abandoned. This application Sept. 8, 1969, Ser. No. 856,186
Claims priority, application Germany, Aug. 23, 1963, B 73234
Int. Cl. C07c *43/30*
U.S. Cl. 260—615 A 8 Claims

Production of 4-halogen-2-formylbutene-(2) or its lower alkyl acetals or lower fatty acid acylates by the action of certain halogenating agents on 2-formyl-2-hydroxybutene-(3) or its acetals or its acylates in the presence of tertiary amines such as trialkyl amines or N-alkyl derivatives of nitrogen con-

taining heterocyclic compounds such as piperidine, morpholine, piperazine or similar compounds having 5 to 6 ring members.

3,760,005

CYCLIC POLYETHERS AS CATALYST ACTIVATORS IN THE ALKALICATALYZED REACTION OF ALKYLENE OXIDES

Jurgen H. Exner; David P. Sheetz, and Edwin C. Steiner, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 2, 1971, Ser. No. 149,378
Int. Cl. C07c *41/02*
U.S. Cl. 260—615 B **7 Claims**

In the alkali-catalyzed reaction of an alkylene oxide with an active hydrogen compound, the rate of the reaction is increased by the presence of a cyclic polyether having at least four ether groups. Preferred polyethers are those consisting of 4–10 oxyethylene groups.

3,760,006

ION EXCHANGE CATALYSTS FOR THE PREPARATION OF BISPHENOLS

Benny B. Gammill, Lake Jackson; Glen R. Ladewig, Freeport, and George E. Ham, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 17,291, March 6, 1970, Pat. No. 3,634,341. This application June 28, 1971, Ser. No. 157,721
Int. Cl. C07c *39/16, 37/00*
U.S. Cl. 260—619 A **4 Claims**

Modification of an insoluble strong-acid cation-exchange resin in acid form by partial neutralization with a thiazolidine yields an improved catalyst for the preparation of bisphenols by condensation of a phenol and a ketone.

3,760,007

BICYCLIC BENZHYDRYLIDENE DERIVATIVES

Martin Steinman, Livingston, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. Nos. 873,112, Oct. 31, 1969, abandoned, and Ser. No. 714,027, March 18, 1968, abandoned. This application June 11, 1970, Ser. No. 45,535
Int. Cl. C07c *39/12*
U.S. Cl. 260—619 R **4 Claims**

Disclosed herein are bicyclic benzhydrylidene compounds which are non-steriodal hormonal agents useful, for example, in the inhibition of gestation in mammals.

3,760,008

RESORCINOL PROCESS

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 22, 1970, Ser. No. 5,121
Int. Cl. C07c *29/00*
U.S. Cl. 260—621 R **9 Claims**

Resorcinol is produced from the alkali metal salts of symmetrical dichloroisophthalic acid by heating the salt at an elevated temperature in the presence of a limited amount of water.

3,760,009

HYDROQUINONE PROCESS

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 13, 1970, Ser. No. 11,309
Int. Cl. C07c *29/00*
U.S. Cl. 260—621 R **9 Claims**

Hydroquinone is produced from the alkali metal salts of 2,5-dichloroterephthalic acid by heating the salt at an elevated temperature in the presence of a limited amount of water.

3,760,010

PURIFICATION OF 2,4,5-TRICHLOROPHENOL

Alexander H. Widiger, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 30, 1970, Ser. No. 59,740
Int. Cl. C07c *39/32*
U.S. Cl. 260—623 R **3 Claims**

2,4,5-Trichlorophenol containing methoxyphenol impurities is purified by reacting the crude material with aqueous chromic acid and separating the purified product.

3,760,011

TRIOLS BY HYDROGENATION OF BICYCLIC FURODIOXOLES

Alfred G. Robinson; Alden E. Blood, and Hugh J. Hagemeyer, Jr., all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 798,803, Feb. 12, 1969, Pat. No. 3,564,017. This application Apr. 14, 1969, Ser. No. 816,073
Int. Cl. C03c *31/18;* C08f *3/30;* C08g *17/00*
U.S. Cl. 260—635 E **28 Claims**

Triols having a neopentyl structure are prepared by catalytic hydrogenation, preferably in the presence of water, of certain bicyclic furodioxole compounds at elevated temperatures and pressures. For example, 3,3-dimethyl-1,2,4-butanetriol is prepared by catalytic hydrogenation of tetrahydro-[2,3-d]-1,3-dioxol-5-ol at temperatures in the range from about 75°C. to about 175°C. and pressures of about 100 psi to about 10,000 psi. Triols are useful solvents and intermediates in the preparation of alkyd coating compositions and plasticizers for resinous materials such as polyvinyl chloride.

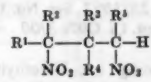
3,760,012

PREPARATION OF 1,3-DINITROALKANES

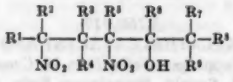
John M. Larkin, Wappingers Falls, N.Y., assignor to Texaco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 782,411, Dec. 9, 1968, abandoned. This application Dec. 10, 1971, Ser. No. 206,870
U.S. Cl. 260—644 **10 Claims**

A method of preparing 1,3-dinitroalkanes corresponding to the formula:



by contacting a dinitroalcohol having at least five carbon atoms corresponding to the formula:



with a basic catalyst at a temperature of from 0° to 150°C. Valuable co-products recoverable from the reaction are ketones or aldehydes. The contemplated 1,3-dinitroalkanes are useful as fuel and lubricant additives and may be converted by hydrogenation to corresponding diamines.

3,760,013

1-(DICHLORONITROMETHYL)BENZENE

Wilson F. Gum, Jr., and David A. Nelson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 15, 1972, Ser. No. 289,320
Int. Cl. C07c *79/12*
U.S. Cl. 260—646 **1 Claim**

1-(Dichloronitromethyl)benzene was prepared and found to be active as a bacteriocide and fungicide.

3,760,014

CHLORINATION OF HYDROCARBONS

Frank Barry Haskett, Geneva, Switzerland, assignor to Joan Hixon Martin, Washington, D.C.

Continuation-in-part of Ser. No. 735,397, June 7, 1968, Pat. No. 3,565,792. This application Feb. 22, 1971, Ser. No. 117,382

Int. Cl. C07c *25/06, 25/08*

U.S. Cl. 260—650 R 3 Claims

A process for the chlorination of hydrocarbons wherein the production of the chlorinated hydrocarbon is accelerated by carrying out such chlorination in the presence of sodium sulfide. The presence of sodium sulfide leads to the production of the chlorinated hydrocarbon, hydrogen sulfide, and sodium chloride as products. The sodium sulfide is preferably that produced in the desulfurization of petroleum fractions utilizing metallic sodium.

3,760,015

PRODUCTION OF VINYLIDENE CHLORIDE AND METHYL CHLOROFORM

Sidney Berkowitz, Highland Park, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,378

Int. Cl. C07c *17/08*

U.S. Cl. 260—658 R 6 Claims

1,1,2-Trichloroethane is cracked to vinylidene chloride and other dichloroethylenes, and hydrogen chloride, by heating to 300°–500°C in the presence of sodium chloride crystals; the resultant mixture can be separated, or fed directly into a suspension in an anhydrous carrier of a Friedel-Crafts carrier such as ferric chloride, maintained at a temperature of below 75°C, where the vinylidene chloride is converted to methyl chloroform, and the other dichloroethylenes are reconverted to 1,1,2-trichloroethane.

3,760,016

EXO-3-METHYLTRICYCLO(4.2.1.$0_{2,5}$)NONA-3,7-DIENES AND THEIR PREPARATION FROM ALLENE AND A BICYCLO (2.2.1)HEPTA-2,5-DIENE

Dale Robert Coulson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 23, 1971, Ser. No. 127,398

Int. Cl. C07c *3/00*

U.S. Cl. 260—666 PY 3 Claims

Novel polymer-forming exo-3-methyltricyclo[4.2.1.$0^{2,5}$]-nona-3,7-dienes are prepared from allene and bicyclo[2.2.1]-hepta-2,5-dienes in the presence of palladium(o) or nickel(o) compounds used as catalysts.

3,760,017

HYDROALKYLATION CATALYST AND PROCESS

Alfred Arkell, Wappingers Falls; John M. Crone, Jr., Fishkill, and Robert M. Suggitt, Wappingers Falls, all of N.Y., assignors to Texaco, Inc., New York, N.Y.

Filed May 17, 1971, Ser. No. 144,211

Int. Cl. C07c *15/20*

U.S. Cl. 260—668 F 14 Claims

A method for the catalytic hydroalkylation of an aromatic hydrocarbon. An aromatic hydrocarbon, for example, benzene is contacted with hydrogen and a dual function catalyst at hydroalkylation conditions including a temperature within the range of about 110° to 450°F. and at a hydrogen pressure of at least one atmosphere. The dual function catalyst comprises a Group VIII metal or metal compound selected from the group consisting of nickel, cobalt and palladium and an acidic oxide suppport consisting essentially of a substantially alkali metal-free mixture of about 5 to 60 percent by weight of a crystalline zeolite and about 95 to 40 percent by weight of a silica-alumina cracking catalyst. Preferred Group VIII metals include nickel and palladium. The hydrogenation activity of the Group VIII metal may be modified by the inclusion of tungsten. Before use the composite catalyst is calcined at a temperature within the range of about 800° to 1,500°F. and is reduced with hydrogen at a temperature within the range of about 400° to 1,200°F. The process is useful in the hydroalkylation of benzene to prepare cyclohexylbenzene.

3,760,018

HYDROALKYLATION CATALYST AND PROCESS

Robert M. Suggitt; Alfred Arkell, and John M. Crone, Jr., all of Wappingers Falls, N.Y., assignors to Texaco, Inc., New York, N.Y.

Filed May 17, 1971, Ser. No. 144,213

Int. Cl. C07c *15/20*

U.S. Cl. 260—668 F 16 Claims

A method for the catalytic hydroalkylation of an aromatic hydrocarbon. An aromatic hydrocarbon, for example, benzene is contacted with hydrogen and a dual function catalyst at hydroalkylation conditions including a temperature within the range of about 200° to 450°F. and at a hydrogen pressure of at least one atmosphere. The dual function catalyst comprises rhenium and an acidic oxide support. The acidic oxide support may be a silica-alumina cracking catalyst or a substantially alkali metal-free mixture of about 5 to 60 percent by weight of a crystalline zeolite and about 95 to 40 percent by weight of an alumina or a silica-alumina cracking catalyst. The hydrogenation activity of the rhenium may be modified by the inclusion of a Group VIII metal, a Group VI metal or their mixtures. Before use the composite catalyst is calcined at a temperature within the range of about 800° to 1500°F. and is reduced with hydrogen at a temperature within the range of about 400° to 1200°F. The process is useful in the hydroalkylation of benzene to prepare cyclohexylbenzene.

3,760,019

HYDROALKYLATION CATALYST AND PROCESS

John M. Crone, Jr., Fishkill, and Alfred Arkell, Wappingers Falls, both of N.Y., assignors to Texaco, Inc., New York, N.Y.

Filed May 17, 1971, Ser. No. 144,214

Int. Cl. C07c *15/20*

U.S. Cl. 260—668 F 14 Claims

A method for the catalytic hydroalkylation of an aromatic hydrocarbon. An aromatic hydrocarbon, for example, benzene is contacted with hydrogen and a dual function catalyst at hydroalkylation conditions including a temperature within the range of about 110° to 450°F. and at a hydrogen pressure of at least one atmosphere. The dual function catalyst comprises a Group VIII metal or metal compound selected from the group consisting of nickel, and cobalt and an acidic oxide support consisting essentially of a silica-alumina cracking catalyst. A preferred Group VIII metal is nickel. The hydrogenation activity of the Group VIII metal may be modified by the inclusion of tungsten. Before use the composite catalyst is steamed at a temperature within the range of about 800° to 1400°F. and is reduced with hydrogen at a temperature within the range of about 400° to 1200°F. The process is useful in the hydroalkylation of benzene to prepare cyclohexylbenzene.

3,760,020

BIS-(DIALKYLADAMANTYL)BENZENES

Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Sept. 2, 1971, Ser. No. 177,459

Int. Cl. C07c *15/12*

U.S. Cl. 260—668 F 12 Claims

Novel compounds of bis-(dialkyladamantyl)benzenes are produced. The compounds are useful as coolants, lubricants and mold release agents.

3,760,021
ALKYLATION CATALYST

Jesse K. Boggs, Seabrook, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Aug. 13, 1971, Ser. No. 171,733
Int. Cl. C07c *5/28*
U.S. Cl. 260—671 P **11 Claims**

A homogeneous catalyst system useful in selectively tertiary alkylating aromatic hydrocarbons consists essentially of the complex resulting from the reaction of aluminum chloride and cuprous chloride in a molar excess of aromatic hydrocarbon solvent, wherein the molar ratio of $AlCl_3$ to CuCl is within the range of about 0.4 to about 0.5.

The complex may be formed by admixing the constituents at room temperature and allowing the admixture to stand under an inert atmosphere for an extended period, or the constituents may be refluxed under substantially atmospheric pressure for a shorter time period in order to form the complex.

The homogeneous catalyst may be used under calculated conditions which are generally known to those skilled in the art. The use of a tertiary (Type III) olefin as the alkylating agent permits alkylation conditions which employ higher temperatures and pressures than can be used if a tertiary alkyl chloride is employed as the alkylating agent.

3,760,022
ALKYLATION OF AROMATIC HYDROCARBONS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 8, 1971, Ser. No. 196,794
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 R **10 Claims**

Aromatic hydrocarbons are alkylated with saturated hydrocarbons by treating the mixture of reactants with an alkyl halide in the presence of a Friedel-Crafts catalyst.

3,760,023
HYDRODEALKYLATION PROCESS WITH PROMOTED GROUP VIB METALS AND PROMOTERS

Ralph E. Patrick, Flatwoods; Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 769,735, Oct. 22, 1968, abandoned.
This application Apr. 26, 1971, Ser. No. 137,666
Int. Cl. B01j *11/06*; C07c *3/58*
U.S. Cl. 260—672 R **8 Claims**

A process for the hydrodealkylation of alkyl-substituted aromatic hydrocarbons, including contacting the alkyl-substituted aromatic hydrocarbons with a catalyst comprising a metal of Group VIB of the Periodic System, such as chromium, molybdenum, and tungsten, and mixtures thereof, in an amount of about 5 to 15 per cent by weight of the finished catalyst, and a promoter selected from the group consisting of alkali metals, alkaline earth metals, rare earth metals, and mixtures thereof, such as potassium, rubidium, cesium, calcium, strontium, barium, cerium, thorium, etc., in an amount between about 1 to 10 percent by weight of the finished catalyst, at a temperature of about 1,050° to 1,200°F, a pressure of about 100 to 1,000 psig., a liquid hourly space velocity of about 0.1 to 5, and a hydrogen-to-hydrocarbon mole ratio between about 3 and 15 to 1.

3,760,024
PREPARATION OF AROMATICS

John Cattanach, Camberley, England, assignor to Mobil Oil Corporation, New York, N.Y.

Filed June 16, 1971, Ser. No. 153,855
Int. Cl. C07c *5/27*
U.S. Cl. 260—673 **4 Claims**

A process for the preparation of aromatic compounds is set forth which involves contacting a feed consisting essentially of C_2–C_4 paraffins and/or olefins with a crystalline aluminosilicate of the ZSM-5 type and recovering the aromatics produced. The described process can be carried out in the absence of a hydrogenation/dehydrogenation component and in the absence of added hydrogen.

3,760,025
TELOMERIZATION REACTIONS UTILIZING CATALYSTS COMPOSED OF CERTAIN ORGANOMETALLIC COMPLEXES AND TRANSITION METALS OR THEIR COMPOUNDS

Joseph H. Merkley, Gastonia, N.C., assignor to First National City Bank, New York, N.Y.

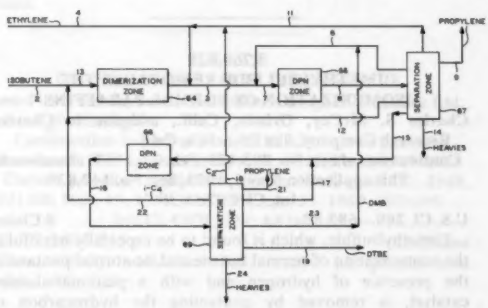
Filed Aug. 31, 1970, Ser. No. 68,589
Int. Cl. C07c *3/10*
U.S. Cl. 260—680 B **27 Claims**

Telomerization reactions utilizing catalyst systems composed of (1) liquid hydrocarbon solutions or mixtures of complexes such as those made from (a) n-butylsodium or n-butylpotassium, with (b) alkyllithiums such as n-butyllithium and (2) transition metals or their compounds such as Raney nickel and nickel acetylacetonate give a polybutadiene having a high cis-1,4 content.

3,760,026
SYNTHESIS OF DI-TERT-BUTYLETHYLENE USING OLEFIN DISPROPORTIONATION

Robert E. Reusser, and Stanley D. Turk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1971, Ser. No. 176,095
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **10 Claims**



Di-tert-butylethylene is prepared by contacting neohexene with an olefin disproportionation catalyst having activity for concurrent double bond isomerization. The di-tert-butylethylene is a suitable high octane component of gasoline fuels and finds particular utility in non-leaded gasolines.

3,760,027
AMIDE-NICKEL SALT COMPLEXES USED AS OLEFIN OLIGOMERIZATION CATALYST

Howard E. Dunn, Evansville, Ind., assignor to Phillips Petroleum Company, Bartlesville, Okla.

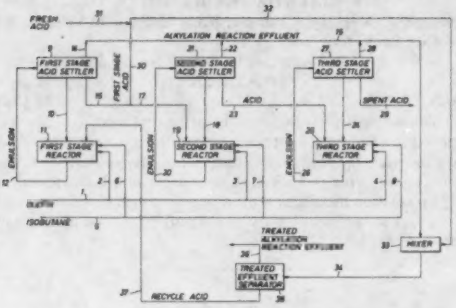
Division of Ser. No. 864,564, Oct. 7, 1969, Pat. No. 3,651,111.
This application Sept. 17, 1971, Ser. No. 181,595
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **7 Claims**

Amide-nickel salt complexes having constituents of substituted 2-aminomalonamides and nickel salts are produced, which complexes are useful as a catalyst in the oligomerization of monoolefins. Bis[N,N'-dicyclohexyl-2-(cyclohexylamino)malonamide] reacts with nickel chloride to form bis[N,N'-dicyclohexyl-2-(cyclohexylamino)malonamide] dichloronickel, which is used as an oligomerization catalyst for propylene.

3,760,028
REMOVING DIALKYL SULFATES FROM A HYDROCARBON EFFLUENT WITH SULFURIC ACID FROM AN ALKYLATION SETTLER

James O. Francis, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,282
Int. Cl. C07c 3/54
U.S. Cl. 260—683.46 10 Claims



A multi-stage alkylation for alkylating lower isoparaffins with lower olefins with sulfuric acid catalyst in which the sulfuric acid is transferred serially from one reaction stage to another utilizes sulfuric acid separated from the first stage acid settler to treat the hydrocarbon effluent. The acid from the initial reaction stage separates dialkyl sulfates from the hydrocarbon effluent, and the acid containing dialkyl sulfates is recycled as alkylation catalyst to the alkylation process.

3,760,029
DIMETHYLSULFIDE REMOVAL IN THE ISOMERIZATION OF NORMAL PARAFFINS

Charles S. McCoy, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 803,123, Feb. 27, 1969, abandoned. This application May 6, 1971, Ser. No. 142,839
Int. Cl. C07c 5/30
U.S. Cl. 260—683.68 8 Claims

Dimethylsulfide, which is found to be especially harmful in the isomerization of normal butane and/or normal pentane in the presence of hydrogen and with a platinum-alumina catalyst, is removed by contacting the hydrocarbon or hydrogen feed with molecular sieve particles. The molecular sieves are regenerated at least every 24 hours in order to maintain less than 1 ppm dimethylsulfide in the reactor feed.

3,760,030
MULTIPLE SEQUENCE BLOCK COPOLYMERS OF SILICONES AND STYRENE

John William Dean, Averill Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 26,082, April 6, 1970. This application June 2, 1971, Ser. No. 149,396
Int. Cl. C08f 33/02, 35/02, 35/06
U.S. Cl. 260—827 13 Claims

Multiple sequence block copolymers of silicone and styrene having the formula:

$(1)\,(ABA)_x$

are produced, where A represents repeating diorganosiloxy units and B represents a polystyrene chain. This ABA chain is repeated from three to 10 times. The materials have high elongation and tensile strength and are useful in the formation of strong, elastic films.

3,760,031
ADHESIVE COMPOSITIONS FROM EPOXIDE AND ETHYLENE VINYL ACETATE COPOLYMER HAVING UNSATURATED CARBOXYLIC ACID GRAFTED THERETO

Koichi Sato; Akira Niki, both of Osaka; Hiroshi Kitamura, Yasu-gun, and Masanobu Morimoto, Osaka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 47,564, June 18, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 217,967
Claims priority, application Japan, June 20, 1969, 44/48821
Int. Cl. C08g 45/04
U.S. Cl. 260—836 6 Claims

Adhesive compositions for effecting adhesion between an ethylene-vinyl acetate copolymer and a solid material comprising (A) a grafted product obtained by reacting an ethylene-vinyl acetate copolymer or a derivative thereof with a carboxylic acid or its anhydride having a conjugated double bond in the molecule and (B) a compound having epoxide group.

3,760,032
UNSATURATED ESTERS, POLYESTERS, AND CROSS-LINKED POLYESTERS

Ernest C. Ford, Jr., Newark, Del., assignor to ICI America, Inc., Wilmington, Del.

Filed Aug. 5, 1970, Ser. No. 61,170
Int. Cl. C08f 21/02
U.S. Cl. 260—869 6 Claims

Novel unsaturated esters and polyesters terminated with alkoxylated phenols and novel cross-linked polyesters formed by reacting these esters and polyesters with a styrene compound. The halogenated cross-linked polyesters are flame retardant.

3,760,033
POLYESTER RESIN COMPOSITIONS

Kenneth Harold Arbuckle, and David Mendel Lazarus, both of London, England, assignors to Berger, Jenson & Nicholson Limited, London, England

Filed Mar. 10, 1971, Ser. No. 123,030
Int. Cl. C08f 21/02
U.S. Cl. 260—872 4 Claims

Curable coating compositions based on unsaturated polyester resin and styrene, particularly those in which the polyester resin has a high degree of unsaturation and/or of chain branching, may be difficult to thin to application viscosity without hazing or phase separation. This problem is solved by adding a minor proportion of an unsaturated hydroxy-ester, particularly β-hydroxyethyl methacrylate or β-hydroxypropyl methacrylate.

3,760,034
GRAFT COPOLYMERS OF LACTONE POLYESTERS

Frank E. Critchfield, South Charleston, and Joseph V. Koleske, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 26, 1971, Ser. No. 109,982
Int. Cl. C08g 39/00, 17/017
U.S. Cl. 260—874 21 Claims

Various ethylenically unsaturated monomers can be graft copolymerized onto lactone polyesters, such as, homopolymers of ϵ-caprolactone or copolymers of ϵ-caprolactone and ϵ-alkyl-ϵ-caprolactones at temperatures between 90° and 150° C. Preferred vinyl monomers include acrylic acid, methacrylic acid, acrylic and methacrylic acid alkyl esters, styrene, vinyl halides, vinylidene halides, alkali metal ar-(methacryloxyethoxy) or -(acryloxyethoxy) benzene sulfonates, alkali metal benzene sulfonates, N-methyl-N-vinyl acetamide, dialkylaminoalkyl acrylic and methacrylic acid esters, vinyl pyridines, acrylonitrile, and vinyl esters of aliphatic acids.

3,760,035

RUBBER-RESIN NETWORK BLENDS AND METHOD OF MAKING SAME

Philip C. Kelley, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 12, 1971, Ser. No. 142,524
Int. Cl. C08f *37/18, 15/40*
U.S. Cl. 260—876 R 9 Claims

Blends of tough, rubbery, essentially completely insoluble alkyl acrylate polymer and of a hard, unplasticized vinyl chloride resin in which a very small proportion of the rubbery polymer is uniformly dispersed as a more or less continuous network are superior high impact rigid resin formulations. Such a product is produced by a two-step overpolymerization process starting in the first step with small latex particles 200–1700 A, more preferably 250 – 1250 A, and most preferably 250 – 800 A, in average diameter of a vinyl chloride seed resin and overpolymerizing on such seed resin particles a thin layer 50 – 700 A, more preferably 100 – 500 A, and most preferably 125 to 350 A, in thickness of the rubbery polyacrylate and, in the second step overpolymerizing on the first step rubber-coated latex particles additional vinyl chloride resin to produce a rubber/resin concentrate or masterbatch which is unique in its ability to be diluted, preferably in powder form, with rubber-free vinyl chloride resin to obtain a final composition containing from about 3 to about 6, more preferably 3 to 5.5 parts/wt. of rubber network material for every 100 parts/wt. of total vinyl chloride resin. The latter blended granular composition requires fluxing and fusing under shear at 350° – 440°F., more preferably about 375° to about 420°F, to develop high resistance to impact (Izod values of 10 to 20 ft.lbs/in. or more), maximized resistance to distortion by heat, maximized resistance to chemicals, and heretofore unrealized high resistance to degradation during processing and during outdoor exposure. In addition, such compositions also are unique in requiring no resinous processing aids during processing on commercial equipment. The vinyl chloride seed resin may be crosslinked, preferably with a crosslinking agent that induces the formation of graft linkages between the seed and the rubbery phases. The blends also exhibit during processing excellent high viscosity hot strength, good high temperature body and dimensional integrity, low die swell, and a somewhat lower coefficient of expansion than many other high impact resin compositions.

3,760,036

PVA LUBRICANT FOR POLYVINYL CHLORIDE

Stephen B. Matthews, Waynesboro, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 12, 1972, Ser. No. 243,474
Int. Cl. C08f *29/24*
U.S. Cl. 260—899 8 Claims

The heat seal characteristics of extruded oriented polyvinyl chloride film are improved by the addition of low molecular weight polyvinyl acetate homopolymers to a conventional extrusion mix and thereafter carrying out extrusion operations.

3,760,037

METHOD OF PREPARING PHOSPHOROUS CONTAINING OLIGOMERS OR POLYMERS

Masao Yoshizawa, Omiya City; Takeo Mikami, Kawagoe City; Nobuo Kobayashi, and Akira Iida, both of Mikawamachi, Ishikawa Gun, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo and The Dainippon Ink Institute of Chemical Research, Saitama Pref., both of Japan

Filed Aug. 21, 1970, Ser. No. 66,153
Claims priority, application Japan, Aug. 25, 1969, 44/66501
Int. Cl. C07f *9/40*; D06c *27/00*
U.S. Cl. 260—931 2 Claims

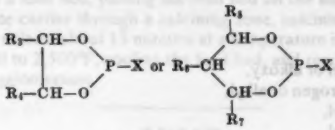
Phosphorus-containing oligomers or polymers useful as flame-resistant substances are obtained by reacting a tertiary phosphite (A) of the general formula:

$$(R_1O)_3P, \quad (A)$$

a dialkyl phosphite halogenide (B) of the general formula:

$$(R_2O)_2PX, \quad (B)$$

a cyclic halogenophosphite (C) of the general formula:

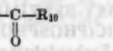


(C)

an aldehyde (D) of the general formula:

$$R_8CHO \quad (D)$$

and a ketone (E) of the general formula:



(E)

wherein R_1 to R_{10} and X are as defined below.

3,760,038

PHOSPHONATED POLYOXYALKYLENE ETHERS

Morton Lewis, Elmhurst, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Nov. 20, 1969, Ser. No. 878,570
Int. Cl. C07f *9/40*; C08g *22/44*
U.S. Cl. 260—932 5 Claims

Phosphonated polyoxyalkylene ethers are produced by reacting a halogen-containing polyoxyalkylene ether with an aliphatic or aromatic phosphite. The resulting compositions are used to prepare flame resistant, non-rigid polyurethane foams.

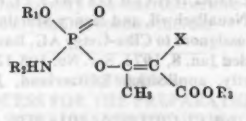
3,760,039

CIS-PHOSPHORIC ACID AMIDE ESTERS

Jean-Pierre Leber, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 829,747, June 2, 1969, abandoned. This application Nov. 12, 1969, Ser. No. 876,086
Claims priority, application Switzerland, June 6, 1968, 8521/68; Mar. 19, 1969, 4133/69; Apr. 21, 1969, 5974/69
Int. Cl. C07f *9/24*; A01n *9/36*
U.S. Cl. 260—941 29 Claims

Insecticidally and acaricidally active phosphoric acid amides of formula:



in which R_1, R_2 and R_3, which may be the same or different, each represent alkyl containing from one to five carbon atoms, and X represents a hydrogen or a chlorine atom, and in which the $-CH_3$ is cis to the $-COOR_3$ in the crotonic acid moiety.

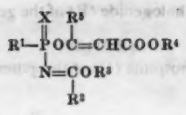
3,760,040

PHOSPHORUS CONTAINING COMPOUNDS

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 247,172
Int. Cl. C07f *9/08, 9/20, 9/24*
U.S. Cl. 260—941 10 Claims

The compounds of this invention are those having the formula



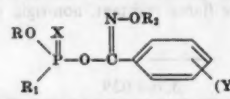
in which
R^1 is alkyl or alkoxy,
R^2 is hydrogen or alkyl,
R^3 is alkyl,
R^4 is alkyl,
R^5 is methyl or $-CH_2COOCH_3$ and
X is oxygen or sulfur and their use as insecticides and acaricides.

3,760,041
O-(N-ALKOXY-BENZIMIDOYL)-(THIONO) PHOSPHORIC(PHOSPHONIC) ACID ESTERS

Walter Lorenz, c/o Farbenfabriken Bayer Aktiengesellschaft, Wuppertal-Cronenberg; Ingebog Hammann; Wolfgang Behrenz, both of c/o Farbenfabriken Bayer Aktiengesellschaft, Cologne, and Wilhelm Stendel, c/o Farbenfabriken Bayer Aktiengesellschaft, Wupertal-Elberfeld, all of Germany

Filed Oct. 20, 1971, Ser. No. 191,072
Claims priority, application Germany, Oct. 26, 1970, P 20 52 379.4
Int. Cl. C07f *9/08, 9/16, 9/40*
U.S. Cl. 260—944 **7 Claims**

O-(N-alkoxy-benzimidoyl)-(thiono)phosphoric (phosphonic) acid esters of the general formula



(I)

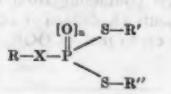
in which
R and R_2 each is an alkyl radical of one to six carbon atoms,
R_1 is an alkyl or alkoxy radical of one to six carbon atoms,
X is an oxygen or sulfur atom,
n is an integer from 0 to 5, and
Y is a halogen atom, an alkyl radical of one to four carbon atoms or a nitro group,
which possess insecticidal, and acaricidal properties.

3,760,042
S,S-DIALKYL-O-ALIPHATICOXYALKYL PHOSPHITES

Ernst Beriger, Neuallschwil, and Henry Martin, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 8, 1971, Ser. No. 105,125
Claims priority, application Switzerland, Jan. 16, 1970, 595/70
Int. Cl. C07f *9/16;* **A01n** *9/36*
U.S. Cl. 260—950 **7 Claims**

Phosphoric acid esters of the formula



wherein X denotes oxygen or sulphur, the integer *n* is the number 0 or 1, R′ and R″ independently of each other represent an alkyl radical with 3 to 5 carbon atoms and wherein a. if X is oxygen, R represents an alkoxyalkyl, alkylmercaptoalkyl or alkenyloxyalkyl radical with at most 7 carbon atoms, an alkenyl radical with 3 to 6 carbon atoms or an unsubstituted benzyl group or a benzyl group which is substituted by halogen, methyl and/or methoxy, or wherein b. if X is sulphur, R represents an alkenyl radical with 3 to 6 carbon atoms or an unsubstituted benzyl group or a benzyl group substituted by halogen, methyl and/or methoxy; these compounds are useful for defoliating and promoting the ripening of crop plants especially cotton.

3,760,043
O-PHENYL-S-ALKYL-N-ALKYL-PHOSPHOROAMIDO-THIOLATES

Shigeo Kishino; Yasuo Yamada; Shizuo Higashikawa; Akio Kudamatsu; Tatsuo Tamura; Shozo Sumi, and Osamu Katsumata, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 27, 1970, Ser. No. 23,510
Claims priority, application Japan, Mar. 27, 1969, 44/22714
Int. Cl. C07f *9/24;* **A01n** *9/36*
U.S. Cl. 260—951 **19 Claims**

O-Phenyl-S-alkyl-N-alkyl-phosphoroamido-thiolates, i.e. O-[(optionally mono to tri halo and/or optionally mono to di alkyl and alkoxy -substituted)-phenyl]-S-(alkyl, alkenyl, alkynyl, chloroalkyl and phenyl-alkyl)-N-(alkyl and -phosphoroamido-thiolates or -amido-thiolphosphoric acid esters, which possess fungicidal, acaricidal and insecticidal, as well as nematocidal properties and which may be produced by conventional methods.

3,760,044
N-ALKYL-PHOSPHORO-AMIDO-THIOATES

Gerhard Schrader, Wuppertal-Cronenberg; Ludwig Eue; Helmuth Hack, both of Cologne, all of Germany; Seiichi Hirane; Masahiro Aya; Shigeo Kishino, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 9, 1970, Ser. No. 10,026
Claims priority, application Japan, Feb. 14, 1969, 44/10486
Int. Cl. C07f *9/24;* **A01n** *9/36*
U.S. Cl. 260—954 **9 Claims**

N-alkyl-phosphoro-amido-thioates, i.e. O-(2-nitrophenyl)-O-alkyl-N-alkyl-phosphoro-amido-thioates or O-(2-nitrophenyl)-O-alkyl-N-alkyl-amido-thionophosphates, which possess herbicidal properties and which may be produced by conventional methods.

3,760,045
PROCESS OF PREPARING SHAPED OPTICAL BODIES USEFUL AS AIDS TO VISION

Heinrich Thiele, Kiel, and Wilhelm P. Soehnges, Munich, both of Germany, assignors to said Heinrich Thiele, Kiel, Germany, by said Soehnges

Continuation-in-part of Ser. No. 690,028, Dec. 12, 1967, Pat. No. 3,553,299. This application Dec. 23, 1970, Ser. No. 101,121
Int. Cl. B29d *11/00, 11/02*
U.S. Cl. 264—1 **5 Claims**

Optical lenses useful for replacing damaged or cataractous eye lenses, contact lenses, and other aids to vision obtained from the lens nucleus substance have a high transparency and their optical characteristics such as curvatures, refractive index, and others, can be varied as required.

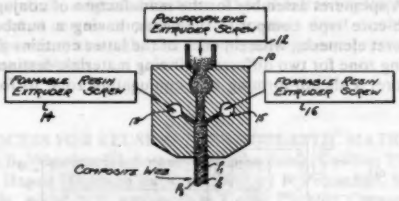
3,760,046
PROCESS FOR PRODUCING A COMPOSITE YARN WHICH IS BULKY, SLIP-RESISTANT AND OF HIGH STRENGTH

Harold A. Schwartz, Litchfield, Conn., and Morton I. Port, West End, N.J., assignors to Avisun Corporation, Philadelphia, Pa.

Filed Aug. 4, 1967, Ser. No. 658,562
Int. Cl. B29d *7/20, 27/00*
U.S. Cl. 264—47 **6 Claims**

Composite polyolefin yarns formed by a polypropylene or high-density polyethylene core or center ply coated with at

least one layer of a thermoplastic material such as a foamed resin, which serves to deluster and to reduce the slippage properties of the resultant yarn, and also to impart other characteristics thereto which improve the dye-ability and bondability of fabrics woven from the yarn, without sacrificing the advantages gained by the use of a high-strength core.



3,760,047

PROCESS FOR THE MANUFACTURE OF POLYMER FOAMS CONTAINING ESTERS OF TERTIARY ALCOHOLS AS SIDE GROUPS

Rudolf Gaeth, Limburgerhof; Bernhard Schmitt, Kirchzarten, and Dieter Blum, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 4, 1970, Ser. No. 95,379

Claims priority, application Germany, Dec. 30, 1969, P 19 65 588.0

Int. Cl. B29d *27/08*; C08f *3/50*

U.S. Cl. 264—54 **7 Claims**

A process for the manufacture of foams by heating polymers containing polymerized units of esters of ethylenically unsaturated polymerizable acids having three or four carbon atoms with tert-butanol at elevated temperatures wherein a pH of from 2.0 to 0.1 is set up in aqueous systems of the polymers, the water is evaporated and the residue is heated to temperatures above the decomposition temperature of the carboxylic esters.

3,760,048

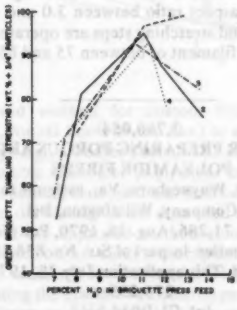
BRIQUETTING AND CALCINING CRUSHED MINE RUN WESTERN PHOSPHATE SHALE ORE

James K. Sullivan, and Richard I. Howard, both of Pocatello, Idaho, assignors to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 871,647, Oct. 17, 1969, abandoned, which is a continuation of Ser. No. 708,580, Feb. 27, 1968, abandoned. This application Apr. 22, 1970, Ser. No. 30,688

Int. Cl. C22b *1/20*, *1/14*

U.S. Cl. 264—56 **5 Claims**



A strong, calcined phosphate agglomerate useful as a phosphorous furnace feed is produced by crushing mine run western phosphate shale ore to substantially -½ inch, agglomerating the crushed shale with sufficient water to produce phosphate agglomerates having a moisture content of between about 9 to about 12% (preferably 10 to 11.5%), placing the phosphate agglomerates on a non-agitated, perforate carrier to form a feed bed, passing the feed bed on the non-agitated, perforate carrier through a calcining zone, calcining the feed bed for at least about 15 minutes at a temperature in the range of 2,000 to 2,500°F, cooling the feed bed, and recovering calcined agglomerates.

3,760,049

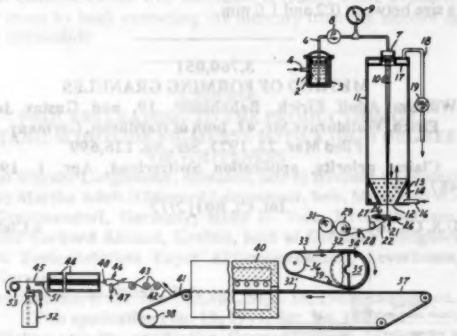
METHOD OF FIRING DRY SPUN REFRACTORY OXIDE FIBERS

Albert Borer, St. Paul, and Gerald P. Krogseng, Village of Bayport, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 1, 1971, Ser. No. 119,748

Int. Cl. C04b *35/64*

U.S. Cl. 264—57 **6 Claims**



A viscous solution or dispersion of soluble or dispersed metal compounds is extruded from a spinnerette, the resulting continuous green fibers are drawn in air (preferably as a strand) and allowed to continuously accumulate or collect in a free-form, relaxed manner in the configuration of offset or superimposed loops on a moving belt which is continuously passed through a furnace to remove volatiles and burn off organic material, and the resulting continuous refractory fibers are continuously pulled in a straight or linear form through a furnace at higher temperature to densify, strengthen, straighten and/or modify the microstructure of the fibers or develop desired crystalline species therein.

3,760,050

PROCESS FOR THE PREPARATION OF SUBSTANTIALLY ANHYDROUS MAGNESIUM CHLORIDE FROM MAGNESIUM CHLORIDE HYDRATES

Ivar Blaker, Nystrand; Oystein Boyum, Skien; Knut Anton Andreassen; Reidar Skipperud Lunde, both of Porsgrunn, and Kjell Wallin Tveten, Bole, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Oct. 28, 1970, Ser. No. 84,652

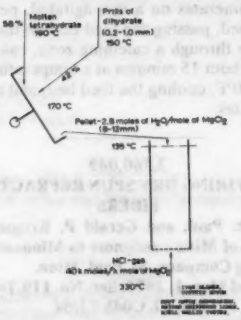
Claims priority, application Norway, Oct. 29, 1969, 4294/69

Int. Cl. B01j *2/14*

U.S. Cl. 264—82 **9 Claims**

This invention relates to a process for preparing magnesium chloride pellets suitable for fusion electrolysis to produce magnesium metal. Solid particles of magnesium chloride hydrate, such as the dihydrate, are agglomerated with molten magnesium chloride hydrate, such as the tetrahydrate, to form a raw pellet product having a moderate moisture content, such as about 2.8 moles of H_2O per mole of $MgCl_2$. The raw pellets are further dehydrated in a shaft kiln to the extent desired. It is

possible to prepare a raw-pellet product that can be dehydrated to substantially anhydrous magnesium chloride in



a one-stage dehydration operation. The solid particles of magnesium chloride hydrate advantageously are prills, suitably of a size between 0.2 and 1.0 mm.

3,760,051

METHOD OF FORMING GRANULES

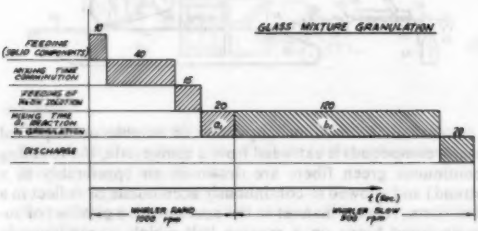
Wilhelm Adolf Eirich, Bahnhofstr. 19, and Gustav Josef Eirich, Walldurner Str. 41, both of Hardheim, Germany

Filed Mar. 22, 1971, Ser. No. 126,699

Claims priority, application Switzerland, Apr. 1, 1970, 4871/70

Int. Cl. B01j 2/12

U.S. Cl. 264—117 **6 Claims**



Method of forming granules from meltable mixtures containing sand, aqueous sodium hydroxide and quicklime. The components are fed to a granulating mixer and are mixed in the presence of heat until compact granules have been obtained. The mixture to be fed to the granulating mixer may also contain soda ash and limestone.

3,760,052

MANUFACTURE OF CONJUGATED SHEATH-CORE TYPE COMPOSITE FIBERS

Norboru Fukuma; Hiroshi Chayamichi; Toshio Okamoto, and Hiroshi Henmi, all of Nobeoka, Japan, assignors to Asahi Chemical Industry Company Limited, Osaka, Japan

Continuation of Ser. No. 822,333, Jan. 16, 1969, abandoned, Division of Ser. No. 641,617, May 26, 1967. This application May 24, 1971, Ser. No. 146,475

Claims priority, application Japan, May 28, 1966, 41/33875; Aug. 10, 1966, 41/52111

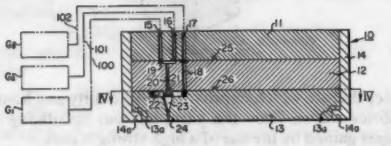
Int. Cl. B29f 3/10

U.S. Cl. 264—171 **8 Claims**

1. A conjugated sheath-core type composite fiber, wherein the core is arranged concentrically with the sheath and composed of two different spinning materials conjugated to each other.

2. A process for the manufacture of conjugated sheath-core type of composite fibers, comprising for each fiber the following steps of : conjoining two different spinning materials so as to form a conjugated core; supplying a different spinning material around the thus conjoined core mass in a concentric manner so as to form a sheath; and extruding the thus conjugated core-and-sheath mass through a discharge opening.

3. A spinneret assembly for the manufacture of conjugated sheath-core type composite filaments, having a number of spinneret elements, wherein each of the latter contains a conjugating zone for two different spinning materials destined for the core; a sheath-forming and conjugating zone to form a



concentric sheath around the thus conjugated core mass and an extruding zone for extruding the thus conjugated core-and-sheath through a discharge opening.

List of References:

(1) Great Britain, Patent Specification No. 760,179 of Oct. 31, 1956, granted to Paul Halbig.

(2) Great Britain, Patent Specification No. 805,033 of Nov. 26, 1958, granted to E.I. Du Pont Nemours and Company, corresponding to U.S. Pat. No. 2,931,091.

(3) Great Britain, Patent Specification No. 896,955 of May 23, 1962, granted to E.I. Du Pont Nemours and Company.

3,760,053

WET-SPINNING PROCESS FOR "DOG-BONE" SHAPED ACRYLONITRILE POLYMER FIBERS

Arutun Maranci, Stratford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 6, 1971, Ser. No. 205,366

Int. Cl. B28b 21/54

U.S. Cl. 264—177 F **2 Claims**

In a wet-spinning process for spinning acrylonitrile polymer fibers from a spinning solution of said polymer in a concentrated aqueous sodium thiocyanate solvent, said process comprising extruding said spinning solution through orifices directly into a cold aqueous coagulating bath to form filaments, pulling the freshly-coagulated filaments away from the orifices, followed by washing, stretching, drying, and relaxing said filaments; the improvement comprising forming such fibers having dog-bone or dumbbell cross-sectional configuration by use of the following conditions; said spinning solution contains 9 percent to 13 percent by weight of acrylonitrile polymer dissolved therein; said aqueous coagulating bath contains 22 percent to 28 percent by weight of sodium thiocyanate dissolved therein; said rectangular orifices each have a long dimension between about 450 and about 700 microns and a short dimension such that the resulting filament spun therefrom has an aspect ratio between 3.0 and 4.0; and said pulling, washing, and stretching steps are operated at a denier-speed product per filament of between 75 and 850 denier-meters per minute.

3,760,054

PROCESS FOR PREPARING POROUS AROMATIC POLYAMIDE FIBERS

Gordon M. Moulds, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 71,286, Aug. 26, 1970, Pat. No. 3,695,992, which is a continuation-in-part of Ser. No. 856,183, Sept. 8, 1969, abandoned. This application July 28, 1972, Ser. No. 276,235

Int. Cl. D01d 5/12

U.S. Cl. 264—210 F **4 Claims**

Porous fibers of an aromatic polyamide in which the void volume for pores having pore diameters of 0.12 micron or less

is greater than 0.03 cc./gm., and the void volume for pores having pore diameters of more than 0.12 micron is less than 0.02 cc./gm. Such fibers are prepared by a process wherein freshly spun fibers are drawn and extracted in one or more solvent-containing aqueous baths of specified composition and temperature, subjected to steam when the drawing step is carried out at certain conditions, and are then dried. Such fibers are dyeable without the use of superatmospheric pressures or dyeing assistants.

3,760,055

PROCESS FOR REUSING THERMOPLASTIC MATRICES

John B. Wheelen, III, Somerville; John Sonia, Califon; Thomas E. Hayes, Highland Park, and Robert P. Petrochko, Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 19, 1969, Ser. No. 851,490

Int. Cl. B29d *7/22*

U.S. Cl. 264—220 **14 Claims**

The process for forming at least two matrices from a thermoplastic matrix and a thermoplastic overlay sheet by contacting a thermoplastic matrix blank with a first pattern and applying heat and pressure to make a first matrix; placing the overlay sheet in contact with the first matrix and a second pattern; applying heat and pressure to the overlay sheet and first matrix in contact with the second pattern to form a second matrix.

3,760,056

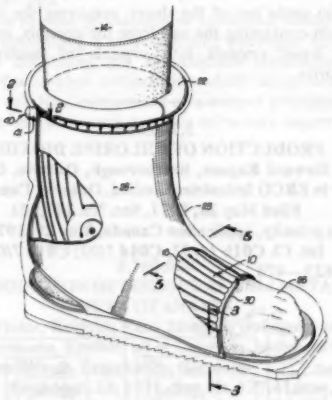
METHOD FOR CUSTOM FITTING AN INFLATABLE BLADDER TO A WEARER'S FOOT

Marion F. Rudy, Northridge, Calif., assignor to Robert C. Bogert, Woodland Hills, Calif.

Filed Sept. 23, 1970, Ser. No. 74,791

Int. Cl. B29c *27/20, 17/00;* **A43b** *7/20*

U.S. Cl. 264—299 **7 Claims**



An improved method for custom fitting an inflatable bladder (e.g., for ski boots or the like) to a portion of a person's anatomy (e.g., a wearer's foot). The inflatable bladder is made of a suitable elastomer (e.g., ether base polyurethane) which may be heated, distended and then cooled to room temperature to set the bladder in the distended shape. A preferred embodiment of the improved method comprises placing the inflatable bladder on a wearer's foot, placing the boot to be worn on the wearer's foot over the bladder, heating the bladder, inflating the bladder to a desired pressure to force the bladder into intimate contact with the wearer's foot and cooling the bladder to room temperature to set it in its distended shape. The bladder, which now conforms to the contour of the wearer's foot, is deflated and the boot and bladder are removed. When the bladder is later re-inflated, it will custom fit the wearer's foot.

Preferably, the elastomer from which the bladder is made will return to its original shape when reheated. Thus, the bladder may be reheated to restore it to its original shape, and the process of the present invention may be re-employed to custom fit the bladder to a different foot.

3,760,057

SEPARATION OF MERCURY FROM AQUEOUS SOLUTION

Ivan K. Kressin, Los Almos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 2, 1971, Ser. No. 168,339

Int. Cl. C01g *13/04, 13/00;* **C01d** *3/12*

U.S. Cl. 423—463 **4 Claims**

A solvent extraction process in which mercury, converted to the triiodide, is rapidly extracted from sulfuric acid solution into octyl alcohol. The extraction is quantitative from 2M or higher acid concentrations and about 98 percent from 1M acid concentrations. The n-octanol is readily made available for reuse by back extracting the mercury from the alcohol as the tetraiodide.

3,760,058

PROCESS LEADING TO THE PRODUCTION OF TITANIUM DIOXIDE PIGMENTS WITH A HIGH DEGREE OF WHITENESS

Paul Werner Langmesser, deceased, late of Krefeld, Germany; by Martha Adele Hildegard Langmesser, heir, Muenster/W.-Gremmendorf, Germany; Hans G. Volz, Krefeldbockum, and Gerhard Kienast, Krefeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 763,488, Sept. 18, 1968, abandoned. This application Feb. 19, 1971, Ser. No. 117,144

Claims priority, application Germany, Sept. 25, 1967, F 53576

Int. Cl. C01g *23/00, 23/06, 23/08*

U.S. Cl. 423—85 **8 Claims**

Production of a hydrolysis solution used to form titanium oxyhydrate and in turn titanium dioxide pigments having a high degree of whiteness, by digesting titanium dioxide-containing raw material with sulfuric acid at a weight ratio of TiO_2 to H_2SO_4 of about 1:1–20, crystallizing the digested titanium in the form of titanyl sulfate dihydrate by adjusting the acid concentration, separating and redissolving the crystals to form an aqueous hydrolysis solution, and separating the hydrolysis solution from any undissolved constitutents present, to permit subsequent hydrolysis of the titanium content in the hydrolysis solution to form titanium oxyhydrate, and recovery of the oxyhydrate thereby formed for producing in turn TiO_2 pigment.

3,760,059

PROCESS FOR THE RECOVERY OF ANTIMONY PENTACHLORIDE FROM CATALYST SOLUTIONS

Hartmut Ertel, Hofheim/Taunus, and Peter Frisch, Schwalheim, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Nov. 16, 1971, Ser. No. 199,308

Claims priority, application Germany, Nov. 18, 1970, P 20 56 648.7

Int. Cl. C01b *29/00*

U.S. Cl. 423—87 **1 Claim**

The invention relates to the recovery of antimony pentachloride from catalyst solutions, which are used for the fluorination of chlorosubstituted methanes or ethanes. The process is based on the reduction of antimony pentachloride, which is dissolved in a used catalyst solution by means of trichloroethylene, at a temperature of from 100° C to 170° C.

The crystalline antimony trichloride obtained precipitates from the solution and is separated from all the impurities. The antimony trichloride obtained can be re-oxidized to form antimony pentachloride by any known process.

3,760,060

SOLVENT EXTRACTION OF GERMANIUM FROM ALUM SOLUTION

Kenneth A. Morgan, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 25, 1972, Ser. No. 229,566
Int. Cl. C01g *17/00, 17/04*
U.S. Cl. 423—89 **5 Claims**

Germanium is extracted from an alum solution utilizing a hydrocarbon solution of a monosubstituted phosphoric acid as the extractant. The hydrocarbon solution is then back extracted with an aqueous oxalic acid solution to recover the germanium component.

3,760,061

HIGH-STRENGTH ACID CONTAINING H2O2 TO SCRUB SO2

Myers G. Hammond, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 2, 1971, Ser. No. 120,337
Int. Cl. C01b *17/00*
U.S. Cl. 423—242 **5 Claims**

Sulfur dioxide can be oxidized to sulfuric acid by a process that involves contacting the SO_2 with an aqueous scrubbing solution of sulfuric acid containing hydrogen peroxide and/or the peroxy acids of sulfur in a gas-liquid contacting device in which the liquid scrubbing phase is made the continuous phase during the actual contacting. In this process the acid concentration of the scrubbing solution can be as high as 99 percent + by weight H_2SO_4.

The process is useful in the abatement of sulfur dioxide from waste gases created during the manufacture of sulfuric acid and also for abating SO_2 from other stack gases, thus alleviating pollution problems. Further, since the hydrogen peroxide or peroxy acids oxidize the sulfur dioxide to H_2SO_4, the process results in a useful product.

3,760,062

SYNTHETIC ZEOLITE

Leonard B. Sand, and Michael L. Sand, both of Holden, Mass., assignors to Zeochem Corporation, Worcester, Mass.

Filed Oct. 26, 1971, Ser. No. 192,488
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 **2 Claims**

Crystalline zeolites are prepared from lithia and lithia-soda systems. A lithium crystalline zeolite having the mordenite crystal structure is prepared from a lithia system having the oxide mole ratios $Li_2O/Al_2O_3/SiO_2/H_2O$ of 3/1/40/314. A lithium-sodium crystalline zeolite having the mordenite crystal structure and the formula $0.34Li_2O{\cdot}0.36Na_2O{\cdot}Al_2O_3{\cdot}10.2SiO_2{\cdot}6.6H_2O$ is prepared from a lithia-soda system.

3,760,063

SYNTHESIS OF PHOTOCHROMIC SODALITE BY A DIFFUSION PROCESS

Russell W. Dreyfus, Cross River, and William P. Hornberger, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1971, Ser. No. 154,651
Int. Cl. C01b *33/26*; C09k *1/54, 1/68*
U.S. Cl. 423—328 **4 Claims**

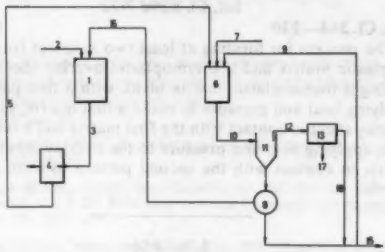
A novel, simple and inexpensive method of synthesizing photochromic sodalite is provided. The method is particularized by the diffusion of NaCl and sulfur into the zeolite $(Na_2O{\cdot}Alb[2O_2{\cdot}2SiO_2)$ x H_2O, known commercially as Molecular Sieve No. 4A. A mixture of this zeolite, NaCl and a sulfur compound is heated in the presence of forming gas and for a time sufficient to cause diffusion of NaCl and sulfur into the lattice structure of the zeolite. The photochromic sodalite produced can be used in display units and in computer memories.

3,760,064

PROCESS FOR THE PRODUCTION OF NEUTRAL CALCIUM HYPOCHLORITE CRYSTALS

Theodore Carl Droste, Johannesburg, South Africa, assignor to Klipfontein Organic Products Corporation Limited, Transvaal, South Africa

Filed Oct. 21, 1971, Ser. No. 191,251
Claims priority, application South Africa, Oct. 27, 1970, 7296
Int. Cl. C01b *11/00*; C01f *11/00*
U.S. Cl. 423—474 **13 Claims**



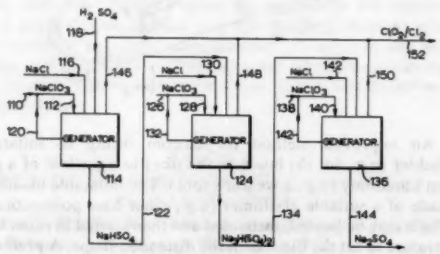
A process for producing crystals of neutral calcium hypochlorite of good filterability from a lime containing about 600 or more parts per million by weight of iron as Fe comprising reacting a slurry of lime with a chlorinating agent to form crystals of a basic calcium hypochlorite, preferably dibasic, adding a barium, zinc, strontium, cadmium, silver or mercury salt to the slurry to precipitate the ferrate and/or ferrite ions as an insoluble or substantially insoluble salt, allowing the basic crystals to settle out of the slurry, removing the supernatant suspension containing the salt from the crystals, and converting the basic crystals into crystals of neutral calcium hypochlorite.

3,760,065

PRODUCTION OF CHLORINE DIOXIDE

William Howard Rapson, Scarborough, Ontario, Canada, assignor to ERCO Industries Limited, Ontario, Canada

Filed May 28, 1971, Ser. No. 147,821
Claims priority, application Canada, May 29, 1970, 084077
Int. Cl. C01b *11/02*; C01d *5/02*; C01b *7/02*
U.S. Cl. 423—478 **10 Claims**



Chlorine dioxide is produced from two reactors, the first reacting sodium chlorate, sodium chloride and/or hydrogen chloride, and sulphuric acid at an acidity in excess of 4.8N to deposit sodium acid sulphate, and the second reacting sodium chlorate, sodium chloride and/or hydrogen chloride, and a sulphate-ion material which is constituted at least in part by the sodium acid sulphate deposited in the first reaction, at an

acidity less than 4.8N to deposit sodium sulphate. In an alternative embodiment, the reaction is carried out in three vessels, the first producing sodium acid sulphate which is used as at least part of the source of acid for a second reactor producing sodium sesquisulfate which in turn is used as at least part of the acid source of the third reactor.

3,760,066

PROCESS FOR PREPARING ALUMINUM TRICHLORIDE

Benedetto Calcagno; Luigi Piccolo, both of Milan, and Marcello Ghirga, Bresso, all of Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Continuation of Ser. No. 43,175, June 3, 1970, abandoned. This application Mar. 31, 1972, Ser. No. 240,269

Claims priority, application Italy, June 13, 1969, 18123 A/69

Int. Cl. C01f *7/60, 7/44*

U.S. Cl. 423—496 **6 Claims**

Aluminium chloride is prepared by the action of chlorine and carbon on alumina previously heated for 1 to 2 hours at 700° to 1,000° C with improvement in chlorine yield and the maintenance of an exothermic reaction.

3,760,067

PROCESS FOR THE PRODUCTION OF ELEMENTAL HALOGEN

Raymond W. Ingwalson, Chattanooga, Tenn., assignor to Velsicol Chemical Company, Chattanooga, Tenn.

Division of Ser. No. 737,810, June 18, 1968, Pat. No. 3,600,331. This application Aug. 24, 1970, Ser. No. 66,637

Int. Cl. C01b *7/00*

U.S. Cl. 423—502 **5 Claims**

A process for the production of elemental halogen which comprises contacting a corresponding hydrogen halide with an oxygen containing gas at oxidation conditions in the presence of a catalyst composition which comprises a composite of a catalytic component of a copper phosphate and a silver phosphate and a non-catalytic refractory support.

3,760,068

PRODUCTION OF FIBROUS ALKALI METAL HEXATITANATES

Gerhard Winter, Krefeld; Hans Zirngibl, Duisburg, and Manfred Mansmann, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 23, 1971, Ser. No. 127,414

Claims priority, application Germany, Apr. 1, 1970, P 20 15 401.2

Int. Cl. C01g *23/00*

U.S. Cl. 423—598 **10 Claims**

In the manufacture of fibrous, water-insoluble alkali metal hexatitanates of the composition $Me_2Ti_6O_{13}$, wherein Me is an alkali metal except lithium by reaction of TiO_2 with an alkali metal compound which gives a basic reaction under the reaction conditions, the improvement which comprises effecting the reaction in a sulfate melt at a temperature up to about 1,300°C. The sulfate melt is preferably an alkali metal sulfate. The TiO_2 may be formed in situ by addition of some other titanium compound. The alkali metal compound preferably comprises sodium, potassium, rubidium or caesium and, expressed as the oxide, is present in about one-half to one-sixth the molar amount of the TiO_2.

3,760,069

PROCESS FOR PRODUCING FERROUS SULFATE

Francis Joseph Mattia, Brooklyn, and Stephen Allen Sakler, Bronx, both of N.Y., assignors to M & T Chemicals Inc., New York, N.Y.

Continuation of Ser. No. 815,189, April 10, 1969, abandoned. This application May 7, 1971, Ser. No. 141,350

Int. Cl. C01g *49/14*

U.S. Cl. 423—558 **1 Claim**

A process is provided for converting iron, such as scrap iron, directly to ferrous sulfate monohydrate in the absence of intermediate formation of ferrous sulfate heptahydrate, the use of pressure, vacuum and/or excessively high operating temperatures. The above is achieved by reacting iron and a sulfuric acid solution having a concentration within the range of between about 10–90 percent for a period of time sufficient to reduce the free acid concentration to between about 2–35 percent, separating the resulting solution from the unreacted iron, filtering the solution to remove any precipitation and impurities contained therein, adding concentrated sulfuric acid to the solution to bring the free sulfuric acid concentration up to between about 35–45 percent for precipitating pure ferrous sulfate monohydrate and separating the pure ferrous sulfate monohydrate precipitate from the filtrate.

3,760,070

MANUFACTURE OF COPPER OXIDE

Brian James Joice, Leeds, and Richard Frederick Niven Mallinson, Oakes, both of England

Filed Sept. 23, 1971, Ser. No. 183,274

Claims priority, application Great Britain, Sept. 24, 1970, 45,497/70

Int. Cl. C01g *3/02, 9/02*

U.S. Cl. 423—604 **9 Claims**

A method for the production of copper oxide or zinc hydroxide which comprises contacting metallic copper or zinc is contacted with an aqueous solution containing oxygen or an oxygen-containing gas, ammonia and an ammonium salt which is preferably ammonium nitrate. The concentration of ammonia is maintained above 4 moles per mole of dissolved copper and the aqueous solution of copper ammine or zinc ammine is separated from any undissolved metal before it becomes saturated with the metal and then heated to precipitate copper oxide or zinc hydroxide from the solution. Preferably the heating is carried out in the absence of added alkali and in the presence of a stream of purging gas and the mother liquor and the purging gas are recycled.

3,760,071

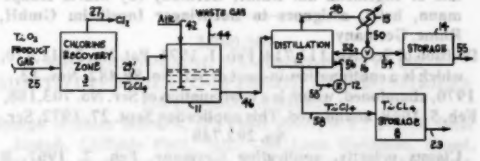
PROCESS FOR TREATING BY-PRODUCT TITANIUM TETRACHLORIDE FROM PYROGENIC TiO_2 PRODUCTION

Stanley F. Brzozowski; Alonzo Farmer, and William C. Pefferman, all of New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 8, 1971, Ser. No. 195,033

Int. Cl. C01g *23/04, 23/02*

U.S. Cl. 423—613 **11 Claims**



By-product titanium tetrachloride recovered from production of pyrogenic titanium dioxide is degassed to remove dissolved free chlorine and subsequently distilled to remove objectionable concentrations of silicon and/or tin present as chlorides therein.

3,760,072

CERTAIN OXIMINOPHOSPHONODITHIOATES AND THEIR USE AS INSECTICIDES AND ACARICIDES

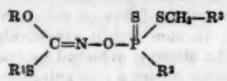
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 26,149, April 6, 1970, Pat. No. 3,652,736. This application Nov. 22, 1971, Ser. No. 201,170

Int. Cl. A01n 9/36

U.S. Cl. 424—210 10 Claims

Compounds having the formula



CCl

in which R is (1) alkyl or (2) allyl; R^1 is alkyl; R^2 is alkyl; and R^3 is (1) hydrogen, (2) lower alkylthio, (3) cyano, (4) phenylthio, (5) substituted phenylthio wherein the substituent is halogen, (6) ethynyl, or (7) $CCl_2{=}CH{-}$, are used as insecticides and acaricides.

3,760,073

TREATMENT OF WOUNDS

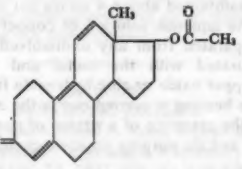
Bernard Mathieu De Fossey, Paris, France, assignor to Roussel UCLAF, Paris, France

Filed June 9, 1971, Ser. No. 151,569

Int. Cl. A61k 17/00

U.S. Cl. 424—243 3 Claims

A method of healing wounds in the skin of warm-blooded animals which comprises applying to such a wound an effective amount of 17β-acetoxy-$\Delta^{4,9,11}$-estratriene-3-one of the formula



(I)

3,760,074

PHARMACEUTICAL COMPOSITIONS CONTAINING A 5-PHENYL-7-BROMO-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONE

Karl Heinz Weber, Gau-Algesheim; Karl Zeile; Peter Dannesberg, both of Ingelheim am Rhine; Rolf Giesemann, Bingen, all of Germany, and Karl Heinz Hauptmann, deceased, late of Ingelheim am Rhine, Germany (by Maria Hauptmann, heir), assignors to Boehringer Ingelheim GmbH, Rhine, Germany

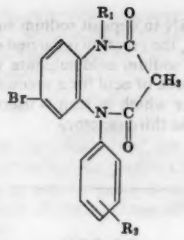
Division of Ser. No. 111,714, Feb. 1, 1971, Pat. No. 3,711,470, which is a continuation-in-part of Ser. No. 89,482, Nov. 13, 1970, abandoned, which is a continuation of Ser. No. 703,188, Feb. 5, 1968, abandoned. This application Sept. 27, 1972, Ser. No. 292,748

Claims priority, application Germany, Feb. 7, 1967, B 91,071; Jan. 18, 1968, B 96,281; Jan. 18, 1968, B 96,282

Int. Cl. A61k 27/00

U.S. Cl. 424—244 3 Claims

Psychosedative and anticonvulsive pharmaceutical compositions containing as an active ingredient a compound of the formula



wherein

R_1 is hydrogen, methyl, ethyl, hydroxy-ethyl or (cycloalkyl of 3 to 6 carbon atoms)-methyl, and

R_2 is hydrogen or halogen;

and a method of tranquilizing and suppressing convulsions in warm-blooded animals therewith.

3,760,075

ULTRASONIC DEAGGREGATION OF THE COPPER COMPLEX OF -METHOXY-1-PHENAZINOL 5,10-DIOXIDE

Joseph Anthony Ranucci, Bloomfield, N.J., assignor to Hoffmann-LaRoche, Inc., Nutley, N.J.

Filed Apr. 23, 1971, Ser. No. 139,290

Int. Cl. A61k 27/00

U.S. Cl. 424—245 3 Claims

Copper complexes of 6-lower alkoxy-1-phenazinol 5,10-dioxides and, in particular, the copper complex of myxin, 6-methoxy-1-phenazinol 5,10-dioxide, are prepared in micronized form, i.e., having discrete particles of less than 20 microns in size, by ultrasonic deaggregation of the copper complex aggregates.

3,760,076

COMBATING PESTS WITH BENZOTHIADIOZINES

Francis Leslie Charles Baranyovits, Wokingham, and Joan Irene Masters, Crowthorne, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 8, 1970, Ser. No. 79,322

Claims priority, application Great Britain, Mar. 12, 1970, 11,935/70

Int. Cl. A01n 9/12

U.S. Cl. 424—246 5 Claims

Methods and compositions for combating pests wherein the active component is a 3-amino-1H-2,1,4-benzothiadiazine and the corresponding sulphoxide; and acid addition salts and metal derivatives thereof.

ERRATUM

For Class 424—251 see:
Patent No. 3,759,921

3,760,077

INJECTABLE COMPOSITIONS OF THE (PLUS)-OPTICAL ISOMER OF THE ALPHA RACEMATE OF 2-(2-ETHYL-2-PHENYL-1, -DIOXOLAN-4-YL)PIPERIDINE AND THEIR USE

Charles R. Thompson, Walnut Creek, and John Hidalgo, Oakland, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 800,282, Feb. 18, 1969, Pat. No. 3,655,680. This application Oct. 15, 1971, Ser. No. 189,760

Int. Cl. A01k 27/00

U.S. Cl. 424—267 21 Claims

Injectable compositions of the (+) optical isomer of the alpha racemate of 2-(2-ethyl-2-phenyl-1,3-dioxolan-4-yl)piperidine, in free base or acid addition salt form, and their

use as a general anesthetic, immobilizing or calming agent or depressant.

3,760,078

FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI USING N-ACYL-PARA-DIALKYLAMINOPHENYL-HYDRAZONES

Karl Heinz Buchel, Wuppertal; Elberfeld Ferdinand Grewe, Burscheid; Paul Ernst Frohberger, Leverkusen, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 876,589, Nov. 13, 1969, Pat. No. 3,660,410. This application Feb. 8, 1972, Ser. No. 224,623
Claims priority, application Germany, Nov. 23, 1968, P 18 10 581.2
Int. Cl. A01n *9/00, 9/20, 9/24*
U.S. Cl. 424—267 **9 Claims**

N-acyl-para-dialkylaminophenyl-hydrazones, i.e., N-(4-dialkylamino- and 4- tetra to penta methylene-imino-substituted phenyl)-N-(alkanoyl, chloroalkanoyl, alkenoyl, carboalkoxy, benzoyl and carbophenoxy)-N'-[(acetyl and cyano)- (alkanoyl and carboalkoxy)-carbonyl]-hydrazones, or N-(4- dialkylamino-, 4-pyrrolidino- and 4-piperidino- substituted phenyl)-N-(alkylcarbonyl, chloroalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, phenylcarbonyl and phenoxycarbonyl)-N'-[(methylcarbonyl and cyano)-(alkylcarbonyl and alkoxycarbonyl)- carbonyl]-hydrazones, which possess fungicidal properties.

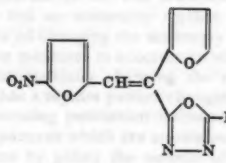
3,760,079

METHOD FOR PROTECTING CHICKENS AND HOGS FROM PASTEURELLA

Ryuzo Ueno, Nishinomiya; Shota Watanabe, Takarazuka, and Sotoyuki Ota, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Filed Jan. 5, 1971, Ser. No. 104,156
Int. Cl. A61k *27/00*
U.S. Cl. 424—272 **4 Claims**

A method of protecting fowl and hogs from *Pasteurella* which comprises administering an effective dose of a compound of the formula



in which R is a member of the group consisting of hydrogen and a tetrahydrofurylacetylamino radical,
to the fowl or hogs to be protected.

3,760,080

PHENYLBUTAZONE-SODIUM-MONOGLYCERATE IN THE TREATMENT OF INFLAMMATION

Heinrich Urwyler, Reinach/Basel-Lands, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 882,693, Dec. 5, 1969, Pat. No. 3,644,395. This application Sept. 17, 1971, Ser. No. 181,629
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **2 Claims**

Phenylbutazone-sodium-monoglycerate is prepared in crystalline form; the compound is comprised in pharmaceutical compositions and has advantageous properties in the treatment of inflammatory diseases.

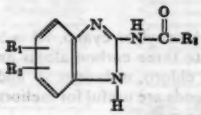
3,760,081

METHOD OF TREATMENT

Louis L. Skaletzky, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 44,903, June 9, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,406
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **4 Claims**

Compounds of the formula I



and the pharmacologically acceptable acid addition salts thereof, wherein R_1 is hydrogen, lower-alkyl, lower alkoxy, halogen or $-CF_3$; R_2 is hydrogen, lower-alkyl, lower-alkoxy, halogen or $-CF_3$ and R_3 is lower alkyl are prepared in pharmacologically acceptable formulations are used treating hypertension in warm-blooded, hypertensive animals free of helminthic infestations by administration of such compounds and compositions thereof at a dosage of from 5–50 mg./kg. per day.

3,760,082

COMPOSITIONS CONTAINING 5-AMINO-3-ETHYL-1-PHENYL-4-PYRAZOLECARBOXAMIDES AND METHODS OF USING THE SAME

Joseph William Marsico, Jr., Pearl River; Joseph Peter Joseph, Cliffside Park, and Leon Goldman, Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 1, 1972, Ser. No. 248,990
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **5 Claims**

The methods of using compounds 5-amino-3-ethyl-1-phenyl-4-pyrazolecarboxamide and 5-amino-3-ethyl-1-(m-fluorophenyl)-4-pyrazolecarboxamide in compositions containing these compounds and a pharmaceutically acceptable carrier, are described. They are useful as analgetic agents in warm-blooded animals.

3,760,083

A METHOD FOR THE USE OF 5-AMINO-3-ETHYL-1-(M-FLUOROPHENYL)-4-PYRAZOLECARBOXAMIDE

Joseph William Marsico, Jr., Pearl River, and Leon Goldman, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 1, 1972, Ser. No. 248,991
Int. Cl. A01k *27/00*
U.S. Cl. 424—273 **3 Claims**

The compound 5-amino-3-ethyl-1-(m-fluorophenyl)-4-pyrazolecarboxamide and compositions with a pharmaceutically acceptable carrier are described. The compositions are useful as anti-psychoneurotic agents in warm-blooded animals.

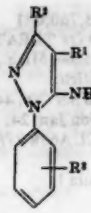
3,760,084

METHOD OF USING 5-AMINO-1-PHENYL OR SUBSTITUTED PHENYL-4-PYRAZOLECARBONITRILES OR CARBOX-AMIDES

Joseph William Marsico, Jr., Pearl River, N.Y.; Joseph Peter Joseph, Cliffside Park, N.J., and Leon Goldman, Nauet, N.Y., assignors to American Cynamid Company, Stamford, Conn.

Filed May 1, 1972, Ser. No. 249,286
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **8 Claims**

Compositions of matter and method of use of compounds of the formula:



wherein R^1 is carbamoyl or cyano, R^2 is hydrogen or lower alkyl having one to three carbon atoms and R^3 is hydrogen, fluoro, m- and p- chloro, m-bromo, o- and p-methyl and m-nitro. The compounds are useful for meliorating inflammation in warm-blooded animals.

3,760,085

METHOD OF COMBATING FUNGI USING N-SUBSTITUTED PHTHALIMIDES

Ferdinand Grewe, Burscheid; Gerhard Schrader, Wuppertal-Cronenberg; Helmut Kaspers, Leverkusen, and Werner Meiser, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 641,125, May 25, 1967, Pat. No. 3,562,292. This application Jan. 2, 1970, Ser. No. 5,395

Int. Cl. A01n *9/22*

U.S. Cl. 424—274 **3 Claims**

Method of combating fungi, especially powdery mildew fungi, using N-[(p-chloro-phenyl, p-methyl-phenyl and ethyl)-mercapto methyl]-phthalimides, alone or in admixture with a carrier vehicle.

3,760,086

TRANQUILIZER

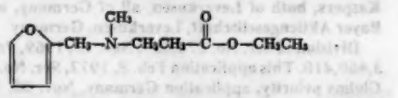
Morton W. Leeds, Murray Hill, and Elex J. Szur, North Plainfield, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Filed Mar. 29, 1971, Ser. No. 129,129

Int. Cl. A61k *27/00*

U.S. Cl. 424—285 **6 Claims**

This invention relates to the compound ethyl(β-N-methyl-furfurylamino) propionate having the formula:



its water soluble salts and a method of preparing the compound by reacting ethyl acrylate with N-methylfurfurylamine. Compositions containing an effective amount of the compounds of the present invention are useful for tranquilizing and producing analgesia in mammals.

3,760,087

PERFUME COMPOSITIONS CONTAINING ETHYL 2,4-DIOXOHEXANOATE

Zoltan G. Hajos, Upper Montclair, and David R. Parrish, Glen Ridge, both of N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Filed Jan. 19, 1970, Ser. No. 4,134

Int. Cl. A61k *7/00*; C11b *9/00*

U.S. Cl. 424—365 **3 Claims**

The present invention comprises perfume compositions containing ethyl 2,4-dioxohexanoate.

ELECTRICAL

3,760,088
AUTOMATIC RHYTHM PLAYING APPARATUS

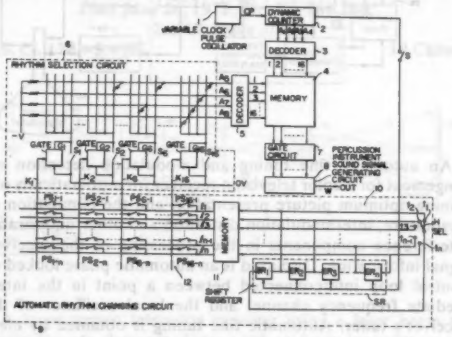
Akira Nakada, Shizuoka-ken, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushika Kaisha, Hamanatsu-shi, Shizuoka-ken, Japan

Filed Apr. 24, 1972, Ser. No. 247,311

Claims priority, application Japan, Apr. 27, 1971, 46/27732; Apr. 27, 1971, 46/27733

Int. Cl. G10h *1/00*

U.S. Cl. 84—1.03 **6 Claims**



An automatic rhythm playing apparatus has a memory which stores note arrangements for a plurality of rhythms. Timing pulse trains representing the rhythm patterns of the note arrangements of specific percussion instrument sounds for a selected rhythm are read out of the memory by circulating address signals and a stationary address signal proper to the selected rhythm. Required percussion instrument sound signals are produced in response to the pulses, and a rhythm sound signal composed of the percussion instrument sound signals is obtained therefrom. The automatic rhythm playing apparatus also has an automatic rhythm changing circuit which is capable of changing the stationary address signal at every one or two measures in accordance with a preset order and thereby automatically changing the rhythm. The apparatus further has a rhythm pattern changing circuit which is capable of generating percussion instrument sound signals having rhythm patterns which are anomalous compared with standard rhythms by gating the outputs of the memory by means of control pulses having a selectively variable period.

3,760,089
ELECTRICAL BUSHING ASSEMBLY HAVING RESILIENT MEANS ENCLOSED WITHIN SEALING MEANS

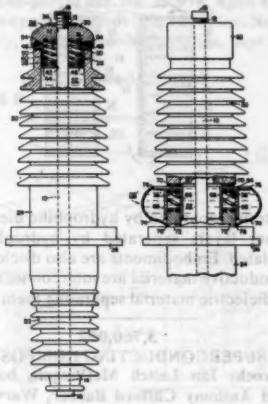
Jerry L. Hildenbrand, and Loren B. Wagenaar, both of Muncie, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 27, 1972, Ser. No. 247,951

Int. Cl. H01b *17/26*

U.S. Cl. 174—12 BH **4 Claims**

Mechanical stress-relieving means for high-voltage bushings. Resilient means is located between a first member attached to the bushing lead tube and a second member which is adjacent to the upper weather casing of the bushing. Different rates of thermal expansion of the bushing components



are compensated for by the resilient means. Bushing dielectric seal between the first and second members is provided by either a gasket member or a semi-flexible band.

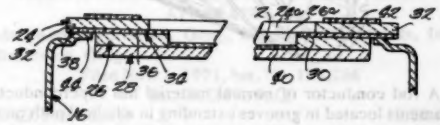
3,760,090
ELECTRONIC CIRCUIT PACKAGE AND METHOD FOR MAKING SAME

William Lee Fowler, Fox Point, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 19, 1971, Ser. No. 173,145

Int. Cl. H05k *5/00*

U.S. Cl. 174—52 S **11 Claims**



A multilayered electronic circuit package is disclosed containing a cavity for the mounting of one or more electronic devices such as semiconductor chips. A metallized lead pattern at the interface of two adjacent layers of the body extends from the top surface portion of the underlying layer within the cavity to the overhanging underlying surface portion of the overlying layer of the body. Bonding wires from the electronic device may be attached to the inner ends of these metallized leads, and external leads may be attached to the exterior ends of these metallized leads.

3,760,091
MULTILAYER CIRCUIT BOARD

Joseph R. Cannizzaro, and Charles F. Emery, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

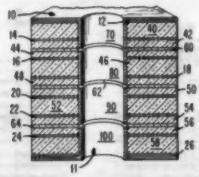
Filed Nov. 16, 1971, Ser. No. 199,206

Int. Cl. H05k *1/04*

U.S. Cl. 174—68.5 **1 Claim**

An improved multilayer circuit board and a method of manufacture thereof comprising a plurality of layers of conductive material separated by layers of dielectric material. Selected dielectric layers include a readily, electrolessly plate-

able, hydrophilic material while other dielectric layers are made of a hydrophobic material which is not readily plateable. All layers are laminated, and holes are formed in the board where layers of conductive material are to be interconnected. An electroless plating interconnects only those layers of con-



ductive material separated by hydrophilic dielectric material, leaving other layers separated by hydrophobic dielectric material isolated. Embodiments are also disclosed in which all layers of conductive material are interconnected regardless of the type of dielectric material separating them.

3,760,092

SUPERCONDUCTING COMPOSITE

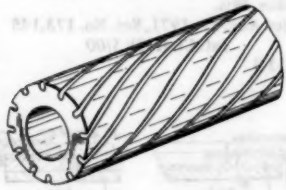
Alan Woolcock; Ian Leitch McDougall, both of Staffordshire, and Anthony Clifford Barber, Warwickshire, all of England, assignors to Imperial Metal Industries (Kynoch) Limited, witton Birmingham, England

Division of Ser. No. 67,740, Aug. 28, 1970, Pat. No. 3,686,750. This application June 20, 1972, Ser. No. 264,453

Claims priority, application Great Britain, Sept. 2, 1969, 43,330/69

Int. Cl. H01v *11/08*

U.S. Cl. 174—126 CS **7 Claims**



A rod conductor of normal material has superconductive filaments located in grooves extending in a helical path on the periphery of the rod. The mouths of the grooves are closed and the composite is a superconductor.

3,760,093

COMPACT CONDUCTOR

Denver L. Pemberton, Fairmount, Ind., assignor to The Anaconda Company, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,083

Int. Cl. H01b *5/08*

U.S. Cl. 174—128 **5 Claims**

Improved electrical conductor is formed by compacting concentric conductors which have outside wires with gages at least equal to the gages of the inside wires. Such a conductor with 37 or more wires may have the outer layer only, made up of square wires.

3,760,094

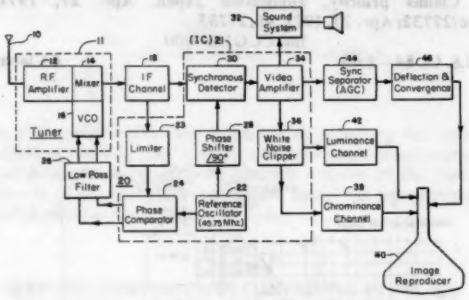
AUTOMATIC FINE TUNING WITH PHASE-LOCKED LOOP AND SYNCHRONOUS DETECTION

Peter C. Skerlos, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 18, 1971, Ser. No. 116,319

Int. Cl. H04n *9/50, 5/58*

U.S. Cl. 178—5.4 SD **13 Claims**



An automatic fine tuning and modulation detection arrangement for a color television receiver for automatically obtaining optimum picture presentation and the elimination of quadrature, intermodulation distortion and other undesirable interference components in the processing of the received signal information. Disclosed is an automatic phase locked or control loop interconnected between a point in the intermediate frequency channel and the local oscillator of the receiver's tuner. Automatic fine tuning is obtained by electronically controlling the frequency of the tuner oscillator in relation to the output of a reference oscillator operating at the desired picture carrier frequency. A single synchronous detector is provided in lieu of the several conventional peak or envelope detectors, which synchronous detector is keyed to the action of the phase-locked or APC loop. The circuitry, with the exception of a low pass filter, is designed in integrated form for inclusion on a single monolithic chip.

3,760,095

COLOR SUB-CARRIER REFERENCE SYSTEM FOR A COLOR TELEVISION RECEIVER

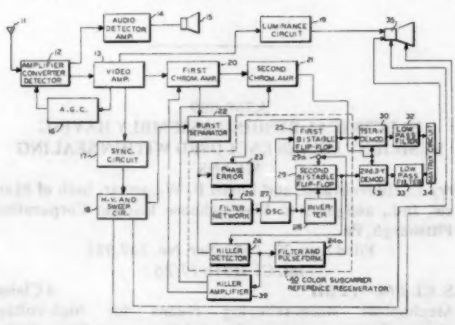
Michio Furuhashi, Katano-shi, Osaka-fu; Teruo Kitani, Takatsuki-shi, Osaka-fu, and Reiichi Sasaki, Hirakata-shi, Osaka-fu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 18, 1972, Ser. No. 254,650

Claims priority, application Japan, Aug. 11, 1971, 46/60805; Aug. 11, 1971, 46/60806

Int. Cl. H04n *9/46*

U.S. Cl. 178—5.4 SY **8 Claims**



A color sub-carrier reference system for a color television receiver which makes possible the elimination of a conven-

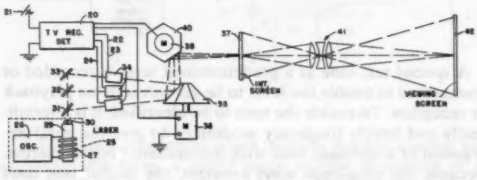
tional phase shift means connected between the subcarrier regenerator and the chroma demodulator. The system comprises a signal generating means which is controlled according to the information on frequency and phase contained in the burst signal. The signal generating means produces signals having an opposite polarity and the second harmonic or double the frequency of the sub-carrier, and feeds these signals to first and second bistable flip-flops which divide the frequency of the input signals by two, respectively. The first flip-flop produces the R-Y reference signal for R-Y chroma demodulation and the second flip-flop produces the B-Y reference signal for B-Y demodulation.

3,760,096

TELEVISION RECEIVER INCLUDING A LARGE SCREEN PROJECTION SYSTEM

Solo S. Roth, One Sherwood Ter., Yonkers, N.Y.

Filed June 26, 1972, Ser. No. 266,260
Int. Cl. H04n *3/08*
U.S. Cl. 178—5.4 ES **10 Claims**



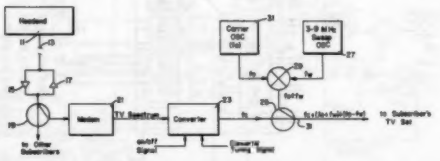
A large screen television receiver using a laser beam to excite discrete elements of rare earth oxides to incandescence. The discrete elements are focused onto a viewing screen which may be viewed by a large audience. A laser beam is split into three parts to show a three color image. Laser beam modulators, of any known type, are used to vary the beam intensity in accordance with the receiver signals. Synchronous moving mirrors are employed to scan the array of elements and a projector system is employed to project the received pattern onto a large screen.

3,760,097

ADJACENT CATV CHANNEL JAMMING

Robert S. Burroughs, Redondo Beach, and F. Douglas Forbes, Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 26, 1972, Ser. No. 266,033
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **6 Claims**



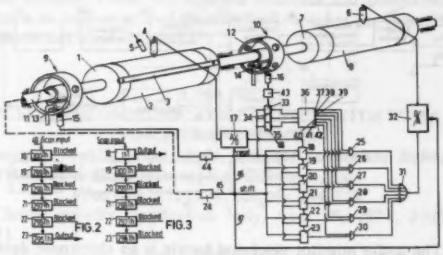
A system for allowing the intelligible reception of a selected CATV channel at the subscriber's TV set and for jamming the CATV channels adjacent to the selected channel so that the subscriber cannot intelligibly receive the adjacent channels by adjusting the fine tuning control on his TV set. In one embodiment, the output signal of a first oscillator which sweeps from 3 to 9 megahertz is heterodyned in a double balanced mixer with the output signal of a second oscillator which is tuned to the center frequency of the selected channel spectrum appearing at the output of a CATV converter. The suppressed carrier, modulated sidebands from the mixer are then added to the selected channel spectrum in order to jam the channels adjacent to that selected channel.

3,760,098

METHOD AND APPARATUS FOR THE SEAMLESS ENGRAVING OF HALF-TONE PRINTING PLATES

Ferdinand Allard de Vos, Castricum, and Jan Hendrik Terter Steege, Abcoude, both of Netherlands, assignors to N. V. Werkspoor-Amsterdam, Amsterdam, Netherlands

Continuation-in-part of Ser. No. 25,978, April 4, 1970, abandoned. This application Nov. 22, 1971, Ser. No. 201,025
Claims priority, application Netherlands, Apr. 17, 1969, 6905923
Int. Cl. H04n *5/78, 1/38*
U.S. Cl. 178—6.6 B **12 Claims**



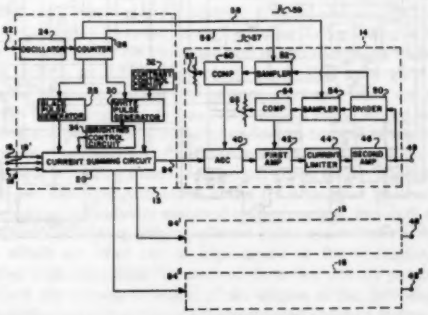
Method and apparatus is provided for point by point and line by line production of half-tone printing cylinders which are seamless in a direction perpendicular to the direction of the lines from a cylindrical master having a seam in that direction. The surfae of the master, including the seam, is scanned to produce a selected number of engraving signals per revolution of the master and printing cylinders. Of these, a certain small number will correspond to the seam on the master and these are eliminated on the printing cylinder and the engraved image on the printing cylinder is "stretched" a corresponding number of engraving points by repeating the engraving of a number of scanning points on the master image.

3,760,099

VIDEO AMPLIFIER FOR A COLOR TELEVISION APPARATUS

Victor Kong, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 1, 1971, Ser. No. 194,266
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 R **12 Claims**

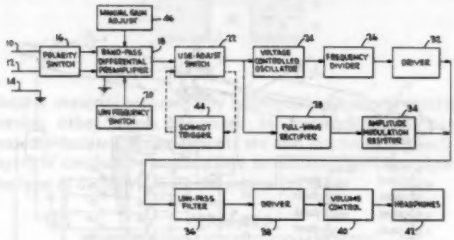


A video amplifier for a color television monitor apparatus or the like is disclosed, wherein the DC level and the gain thereof are automatically adjusted by interposing respectively a black reference pulse and a white reference pulse during the horizontal blanking period of the composite video signal as a pilot signal. The black reference pulse has a predetermined amplitude corresponding to the cut-off voltage of a cathode ray tube. The white reference pulse varies in amplitude according to the setting of the contrast control.

3,760,100
AUDIO ELECTROCARDIOGRAM MONITOR

Charles W. Ragsdale, Laramine, Wyo., and Edward A. Wright, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 866,992, Oct. 16, 1969, abandoned. This application July 30, 1971, Ser. No. 167,738
Int. Cl. H04m *1/00*
U.S. Cl. 179—1 R **5 Claims**

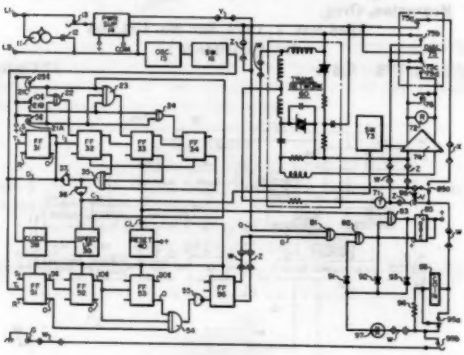


The audio monitor disclosed herein is an electronic device which converts the electrocardiogram into an amplitude and frequency modulated tone. This allows the listener to evaluate the shape of an electrocardiogram merely by listening. This is achieved by converting ECG potentials into an amplitude and frequency modulated tone. The tone increases with frequency and becomes louder as the ECG pattern goes positive, and the tone decreases in frequency while becoming louder as the ECG pattern goes negative.

3,760,101
COIN TELEPHONE CIRCUIT

Robert Vincent Burns, Tinley Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 24, 1972, Ser. No. 220,000
Int. Cl. H04m *17/02*
U.S. Cl. 179—6.3 R **16 Claims**

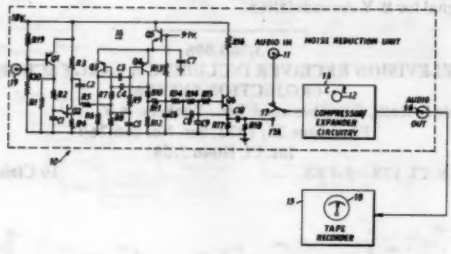


A coin telephone circuit operable by minor strapping changes in the prepay, semi-postpay and emergency service modes of operation. Included is an electronic totalizer which permits the phone to be programmed for any initial deposit rate required. Audio frequency signals are applied to the telephone line, corresponding to the value of the coins deposited and in prepay service provides an indication to the central office that the proper rate has or has not been deposited.

3,760,102
LEVEL SETTING IN NOISE REDUCTION SYSTEMS

David Peter Robinson, and Ray Milton Dolby, both of London, S.W.9, England, assignors to Dolby Laboratories Inc., New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,375
Int. Cl. H03g *7/00*
U.S. Cl. 179—1 R **13 Claims**

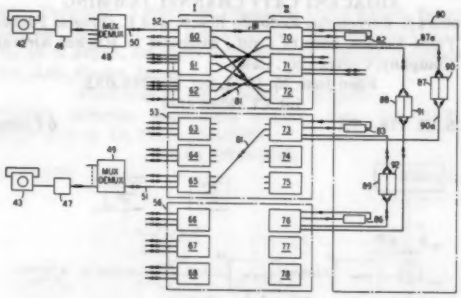


A special test tone at a predetermined level is recorded or transmitted to enable the level to be set correctly on playback or reception. To enable the tone to be identified, it is intermittently and briefly frequency modulated to give the aural impression of a constant tone with intermittent "blips" therein. Because the amplitude stays constant, the modulation does not interfere with level meters and the like.

3,760,103
BIDIRECTIONAL STORAGE CROSSPOINT MATRICES FOR MIRROR IMAGE TIME DIVISION SWITCHING SYSTEMS

Joseph Henry Condon, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1971, Ser. No. 204,013
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 AQ **15 Claims**



Two orthogonally oriented sets of matrix coordinate circuit sets are arranged in bidirectional signal transmission pairs within their respective circuit sets. Respective circuit pairs in the two sets are coupled together at matrix crosspoints by signal storage registers that are operated by clock-driven control memories. Those memories determine both the distribution of input signals from one set of coordinate circuits to crosspoint-coupling storage registers for circuits of the other set and the sequence for collecting crosspoint-stored signals onto circuits of the latter set. The bidirectional crosspoint matrices are utilized in mirror image switching networks for communication systems.

3,760,104

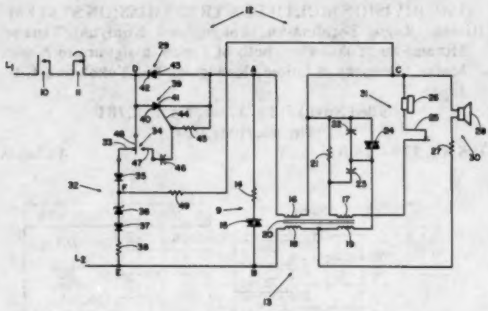
POST PAY TELEPHONE PAYSTATION CIRCUIT

Joseph Thompson; Raymond Charles Hemming; John Edward Critchley, and Ronald Joseph Morrell, all of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 170,454, Aug. 10, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,542

Int. Cl. H04m *17/02*

U.S. Cl. 179—6.3 R 14 Claims



A telephone paystation which permits normal dialling to, and reception from, a called party without deposition of a coin. When the called party answers, the paystation transmitter circuit is completely disabled by the transmission of reverse battery polarity from the central office to the telephone paystation. Normal transmission is restored, upon deposit of a coin, by turning on a controlled rectifier to complete a low impedance path from the telephone line to the voice transmitter circuit.

3,760,105

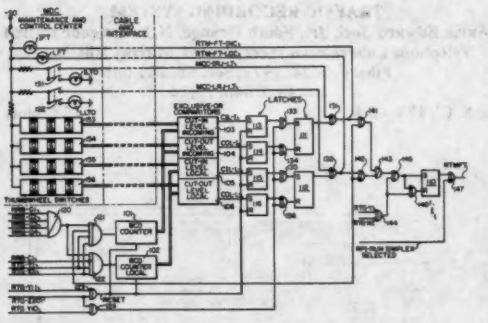
TRAFFIC MONITOR FOR DATA PROCESSING SYSTEM

Sergio E. Puccini, Wooddale, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 1, 1972, Ser. No. 249,282

Int. Cl. H04m *15/26*

U.S. Cl. 179—8 A 8 Claims



In the register-sender subsystem of a telephone switching system, the traffic monitor for determining the number of busy registers in order to distinguish periods of heavy traffic from light traffic comprises a counter, and comparison circuits, with a set of thumbwheel switches in a control center for setting a predetermined number, the comparison circuits being arranged to indicate when the number of busy registers is equal to or exceeds the setting on the thumbwheel switches. The registerosender is of the time-division multiplex type having common logic circuits and a memory which stores information relating to a state of a call, including processing sequence state information which indicates various states including an idle state. The registers have access to the memory and common logic circuits during sequential time slots, and during each time slot when the information for a register is read from memory, the processing sequence state indication is supplied to the counter so as to advance the counter if the register is busy. The settings on the thumbwheel switches include a cut-in level and a cut-out level, and separate comparison circuits are used for comparing the settings against the same counter. There are separate counters and comparison circuits as well as sets of thumbwheel switches for incoming registers and local registers.

3,760,106

PCM TELECOMMUNICATION SYSTEM WITH TDMA VOICE TRANSMISSION

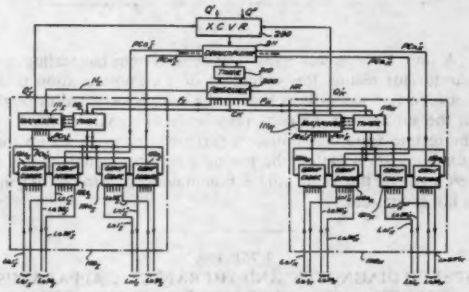
Giancarlo Monti, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

Filed Apr. 17, 1972, Ser. No. 244,578

Claims priority, application Italy, Apr. 15, 1971, 23212 A/71

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 BA 10 Claims



A terminal of a pulse-code-modulation (PCM) time-division multiple-access (TDMA) telecommunication system, serving for the exchange of digitized message samples in the form of interleaved multibit pulse codes between a multiplicity of local channels and a like number of remote channels accessible through another terminal, has K associated processing stations each serving *n* 30-channel groups whose incoming lines are sampled by respective group coders. Each station includes a multiplexer for the outputs of respective group coders whose access to the multiplexer is controlled by a gate in response to a binary activity pattern read out from an associated buffer register, this activity pattern being stored in a memory and periodically updated under the control of respective monitoring units which test the instantaneous condition of the several incoming lines feeding each group coder. The gate blocks the inscription of blank codes from inactive lines in a shift register individually assigned to each group, the shift register thus containing only significant pulse codes from active lines which are read out at high speed to the multiplexer together with allocation bits derived from the activity pattern to inform the remote terminal of the origins of the individual pulse codes in a composite word transmitted during a frame of 125 μsec, the frame being divided into a number of subframes each assigned to a respective station and consisting of a predetermined number of time slots established by a programmer; extra bits may be included in each composite word to make up the allotted number of time slots. At the receiving end, the reverse procedure is followed with restoration of the individual pulse codes to their original relative time position, in respective scanning intervals of a frame, prior to their distribution to the outgoing lines for which they are intended.

3,760,107
TIME DIVISION MULTIPLEX COMMUNICATION SYSTEMS

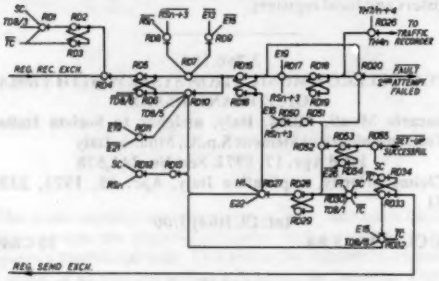
Winston Theodore Duerdoth, Ruislip; Charles Joseph Hughes, London; John Frederick Hesketh, Greenford, and William Desmond Morton, Rickmansworth, all of England, assignors to Her Majesty's Postmaster General, London, England

Division of Ser. No. 782,541, Dec. 12, 1968. This application Mar. 22, 1971, Ser. No. 126,527

Claims priority, application Great Britain, Dec. 11, 1967, 36,149/67

Int. Cl. H04j *3/14*

U.S. Cl. 179—15 BF **2 Claims**



A time division multiplex telephone system has testing apparatus for testing the setting-up of a communication path between two subscribers before the path is switched through to the subscribers. Circuits responsive to signals emitted by the testing apparatus initiate a further attempt to set up the communication path if the testing apparatus signals that the test made on the set up connection indicate that the setting up is not successful.

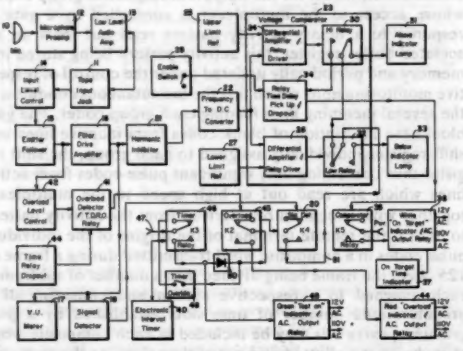
3,760,108
SPEECH DIAGNOSTIC AND THERAPEUTIC APPARATUS INCLUDING MEANS FOR MEASURING THE SPEECH INTENSITY AND FUNDAMENTAL FREQUENCY

Joseph A. Gacek, Cape Canaveral, and Joseph E. Parker, Cocoa Beach, both of Fla., assignors to Tetrachord Corporation, Cocoa Beach, Fla.

Filed Sept. 30, 1971, Ser. No. 185,272

Int. Cl. G10l *1/04*

U.S. Cl. 179—1 SA **9 Claims**



An apparatus for the measurement of fundamental vocal frequencies and relative speech intensity is provided which apparatus has an immediate feedback of information. An input of a complex wave form into the present apparatus produces an output indicating whether the intensity of the input exceeds a predetermined set level. The input is also applied to a harmonic inhibitor circuit which produces an output of the lowest frequency component of the input complex waveform and inhibits harmonics of this lowest frequency component and produces an output indicative of whether the fundamental vocal frequency detected is within a predetermined selected range.

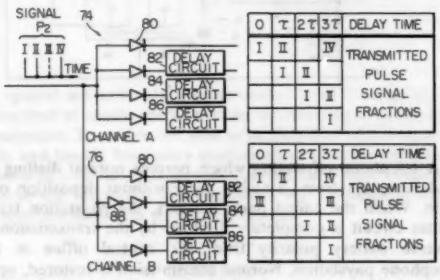
3,760,109
TIME DIVISION MULTIPLEX TRANSMISSION SYSTEM

Hiroshi Kogo, Toshima-ku, Tokyo, and Kuniyuki Tanabe, Minami-ku, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Nov. 15, 1971, Ser. No. 198,781

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 BA **4 Claims**



A system in which each single pulse generator is provided for producing each one single pulse representing each one information, which system including a transmitter consisting of at least two pulse signal generators for producing separate pulse signals each within a pulse duration of the single pulse on each channel, and at least two coding units provided in each channel for converting the pulse signals into corresponding binary coded signals, and a receiver consisting of at least two decoding units provided in each channel for re-converting the transmitted binary coded signals into original pulse signals.

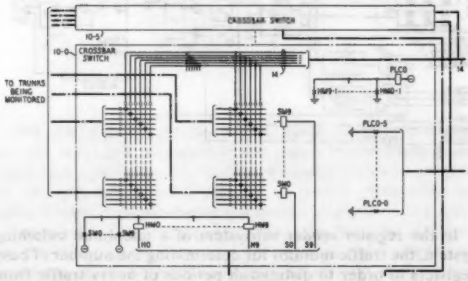
3,760,110
TRAFFIC RECORDING SYSTEM

Amos Edward Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Feb. 24, 1972, Ser. No. 229,085

Int. Cl. H04m *15/26*

U.S. Cl. 179—8 A **25 Claims**



Traffic monitoring equipment includes a concentration stage of switches connected to the apparatus, such as trunks,

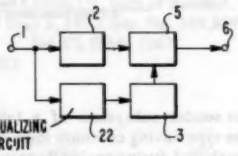
to be monitored and an expansion stage of switches connected to the recording equipment for scoring or registering trunk usage. A counter sequentially enables the concentration switches. However a memory is provided, and circuitry stores in that memory the identity of the destination of each call on the trunks being monitored. Control circuitry sets the expansion switches in accordance with the call destination of the call on the specific trunk being monitored. Information received from the marker of the associated central office writes into memory the destination codes for each call at an address defined by the specific trunk employed on that call. The trunks are scanned in groups of six with an initial assumption that calls on all will be to the same destination. Accordingly, a match is first attempted between the actual call destination from the memory and the assumed call destination priorly stored in a register from the memory address for a prior trunk. On failure of this match trunk status flip-flops allow the proper call destinations to be used for each trunk.

3,760,111

PULSE REGENERATIVE REPEATER FOR A MULTILEVEL PULSE COMMUNICATION SYSTEM

Akira Sawai, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 14, 1971, Ser. No. 152,942
Claims priority, application Japan, June 20, 1970, 45/53614
Int. Cl. H04b *3/04, 3/36*
U.S. Cl. 179—16 E **2 Claims**



Disclosed herein is a pulse regeneration repeater system which includes means for extracting from a train of multi-level code pulses the clock signal defining the bit interval. Received code pulses, prior to entering a clock signal extracting circuit, pass through a distortion compensating equalizing circuit. The equalizing circuit modifies the pulses in the code pulse train to produce output pulses having a half-level width T′ less than the clock period T, but greater than one-half of the clock period in response to code signals which, prior to transmission distortion, have a half-level width of T/2.

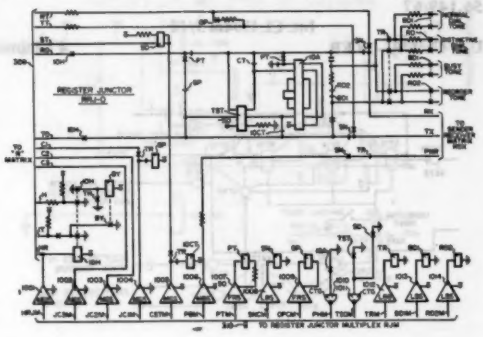
3,760,112

PARTY AND COIN DETECTION ARRANGEMENT FOR A COMMUNICATION SWITCHING SYSTEM

John Edward Busch, Clarendon Hills, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 18, 1972, Ser. No. 227,580
Int. Cl. H04q *5/02*
U.S. Cl. 179—17 A **20 Claims**

A register-sender common control communication switching system having a plurality of registers sharing common memory and logic circuits on a time division multiplex basis and having a plurality of register junctors individually associated with the registers for connection to calling lines to receive signals therefrom includes a party and coin detection arrangement for identifying the calling party of a two party line and for identifying a coin deposit at a paystation. The arrangement includes a switching device in each one of the register junctors for connecting a source of current for a predetermined time interval to one side of a calling line to charge the ringer capacitors and line capacitance connected thereto to the potential of the source prior to connecting a sensitive indicating device to such a side of the calling line to respond to a detection signal supplied thereover indicative of one party of a two party line, or alternatively of a coin deposit at a paystation, and a second switching device for connecting the indicating device to that same side of the line at the end of



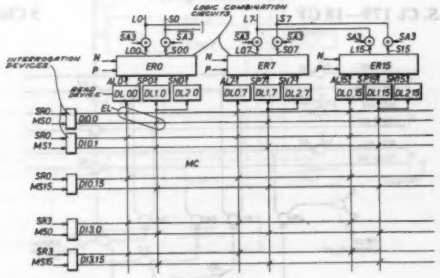
the time interval so that the capacitance cannot cause a momentary erroneous actuation of the indicating device due to a transient discharge thereof in the absence of the detection signal since the capacitance is fully charged before the indicating device is connected to the line.

3,760,113

LINE FINDER FOR A COMMON CONTROL TELEPHONE EXCHANGE

Claude Bouchet, La Varenne-St-Hilaire; Roger Meliani, Sevres, and Vladimir Tomasovitch, Meudon-La-Foret, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,986
Int. Cl. H04q *3/24*
U.S. Cl. 179—18 FG **4 Claims**



Subscribers' line circuits and a linefinder are disclosed for use in a common control telephone exchange to determine the status of subscriber lines. Biasing potentials and switches in the line circuit together with logic circuits in association with the linefinder and the line circuits enable the combination to identify lines requesting service and those in faulty operating condition.

3,760,114

FAULT DISCRIMINATION CIRCUIT

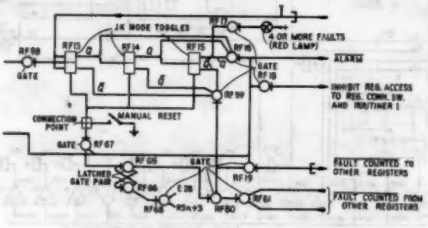
William Desmond Morton, Rickmansworth, and William George Tilston Jones, London, both of England, assignors to Her Majesty's Postmaster General, London, England

Filed Mar. 22, 1971, Ser. No. 126,516

Claims priority, application Great Britain, Dec. 11, 1967, 56,149/67

Int. Cl. H04m 3/12

U.S. Cl. 179—18 EB **4 Claims**


JK MODE TOGGLES
4 OR MORE FAULTS (RED LAMP)
ALARM
INHIBIT REG. ACCESS TO REG. CONN. DW. AND ROUTINER
MANUAL RESET
CONNECTION POINT
FAULT COUNTED TO OTHER REGISTERS
FAULT COUNTED FROM OTHER REGISTERS
LATCHED GATE PAIR

A fault discrimination circuit for a group of registers of a time division multiplex communication system. Each register of the group has a fault counter for counting faults detected by the register. When a predetermined number of faults is recorded the register is taken out of service. Faults detected by a register are signalled to the fault counters of all other registers in the group and set to zero the fault counters of such other registers provided none has recorded the predetermined number.

3,760,115

CROSSPOINT ERROR DETECTION IN TIME DIVISION MULTIPLEX SWITCHING SYSTEMS

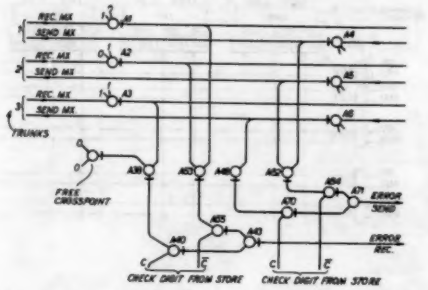
Winston Theodore Duerdoth, Ruislip, and Charles Joseph Hughes, London, both of England, assignors to Her Majesty's Postmaster General, London, England

Division of Ser. No. 782,541, Dec. 12, 1968, Pat. No. 3,622,705. This application Mar. 22, 1971, Ser. No. 126,518

Claims priority, application Great Britain, Dec. 11, 1967, 56,149/67

Int. Cl. H04j 3/14

U.S. Cl. 179—18 GF **3 Claims**



A circuit for detecting the operation of crosspoint switches in a time division multiplex switching system. The crosspoints are coded and when a crosspoint is operated its code is transmitted to a checking circuit that compares the code against a check code and produces an error signal in the event of a discrepancy.

3,760,116

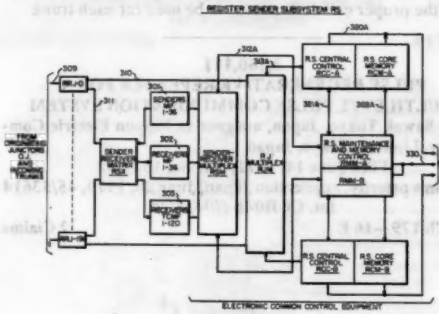
SENDER PULSE TIMING CONTROL

Gerald O'Toole, Elmhurst, and Sergio E. Puccini, Wood Dale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 3, 1972, Ser. No. 214,621

Int. Cl. H04q 11/04

U.S. Cl. 179—18 J **6 Claims**


REGISTER SENDER SUBSYSTEM RS
R.S. CENTRAL CONTROL RCC-A
R.S. CORE MEMORY RCM-A
R.S. MAINTENANCE AND MEMORY CONTROL RMM-A
R.S. CENTRAL CONTROL RCC-B
R.S. CORE MEMORY RCM-B
ELECTRONIC COMMON CONTROL EQUIPMENT

The register-sender subsystem of a telephone switching system is of the type having common logic circuits including a wired program shared during cyclically recurring time slots by a plurality of register-senders, with each register-sender comprising a block of a common memory and having an associated register junctor serving as a peripheral unit for connection via a switching network to an outgoing trunk. The memory block for each register comprises a plurality of sets of storage elements including control sets and data sets which are accessed during sub-time slots. One of the control sets is a sender processor control set, which includes a timing store, a digit store, a dial pulse on-off control bit for controlling an outpulsing relay in the register junctor, and a multifrequency on-off control store for controlling a "time-on period" relay connecting a multifrequency sender output to the line. The timing store is used with common timing counters in the logic circuits for timing the pulse train generation for both dial pulse and multifrequency sending. Since the timing stores are in the individual memory of each register-sender, the pulse trains for different register-senders may be formed independently.

3,760,117

ELECTROMECHANICAL COMMON CONTROL CROSSPOINT TELEPHONE SWITCHING SYSTEM

Stephen J. Czarnecki, Lemont; Harry G. Evers, Genoa; Frank Kellogg, Genoa; William W. Newcum, Genoa; Richard F. Vogel, Wheaton, and John W. Woodward, Schaumberg, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

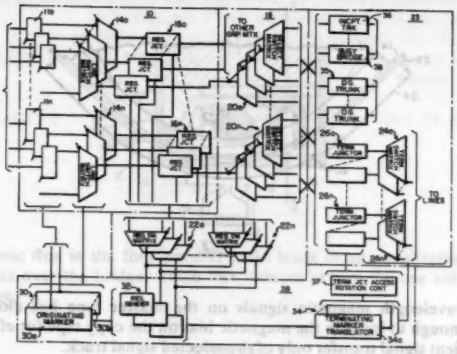
Filed Jan. 27, 1972, Ser. No. 221,236

Int. Cl. H04q 3/42

U.S. Cl. 179—18 GE **10 Claims**

A common control crosspoint switching system, employing electromechanical switching matrices of the terminal-per-sta-

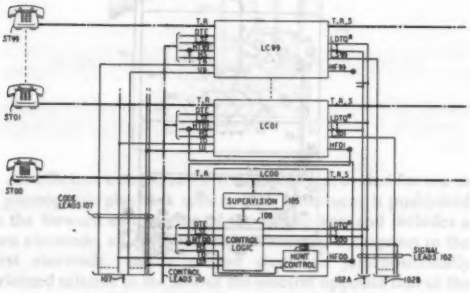
tion type, wherein the matrix connections are such that the originating and terminating markers are completely independent (requiring no interfacing or interlocking) to perform their respective originating and terminating connections.



3,760,118
SWITCHING SYSTEM EQUIPPED FOR ROTARY LINE HUNTING

John Joseph Horenkamp, 31 Longview Ave., Freehold, N.J.; Henry August Meise, Jr., 4140 Eutan Dr., and George William Taylor, 3340 Layola Ct., both of Boulder, Colo.

Filed May 3, 1972, Ser. No. 249,800
Int. Cl. H04q *3/62*
U.S. Cl. 179—18 HA **14 Claims**



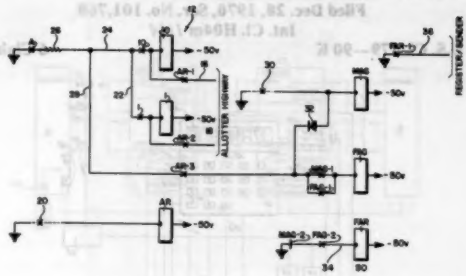
A wired logic scanner controlled switching system is disclosed equipped for the rotary hunting of lines subdivided into hunting groups. When a call is directed to a busy line, it applies a priming signal to the next line in the same hunting group and a scanner is activated to hunt to the next line to test its idle-busy state. If all lines of the group are busy, hunting continues until the called station itself is hunted. At that time, a match circuit terminates the hunting when it detects that the newly hunted line is the originally called line.

3,760,119
CROSSPOINT SWITCH ALLOTTER RELEASE DETECTION CIRCUIT

Frank Kellogg, Genoa, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 31, 1972, Ser. No. 285,279
Int. Cl. H04q *3/495*
U.S. Cl. 179—18 GE **7 Claims**

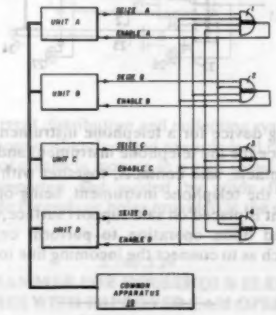
A crosspoint allotter release detection circuit for disabling the crosspoint connection if the allotter is falsely held operated following establishment of the connection, including, first relay means for detecting the completion of crosspoint selection, second relay means, with a slow-to-operate relay coil, coupled to a holding ground for the crosspoint connection, and third relay means interconnecting the first and second relay means, the third relay means responsive to a falsely held operated allotter and operative on the slow-to-operate relay coil to break the crosspoint connection, thereby avoiding undesired erroneous multiple selections in the allotter highway's associated switches.



3,760,120
LOCKOUT SELECTION CIRCUIT

Thomas J. Moorehead, Brockville, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 27, 1972, Ser. No. 275,593
Int. Cl. H04m *3/16*
U.S. Cl. 179—19 **2 Claims**



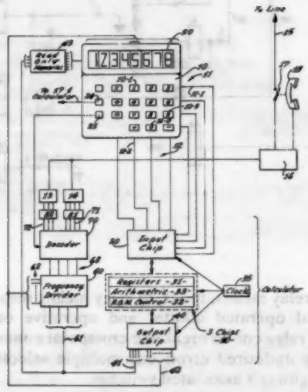
In a system in which a number of units operate one at a time with common apparatus, a lockout circuit comprises a set of NAND gates, one for each unit. Each gate has a seize input normally at logical "0" from its unit and an enable output normally at logical "1" thereto. The output of each gate is also connected to an input of each of the others, so that only one gate at a time may have a "0" output to enable its unit for operation with the common apparatus.

3,760,121

TELEPHONE DIALER WITH ARITHMETIC CALCULATION CAPABILITY AND VISUAL DISPLAY OF DIGITS

Samuel Nissim, Malibu, Calif., assignor to Electronic Arrays, Inc., Mountain View, Calif.

Filed Dec. 28, 1970, Ser. No. 101,768
Int. Cl. H04m 1/44
U.S. Cl. 179—90 K **6 Claims**



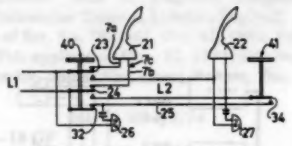
A telephone desk calculator combination with shared keyboard and display for display of dialed-in telephone numbers, general figure entry and arithmetic results.

3,760,122

SWITCHING DEVICE FOR TELEPHONE INSTRUMENTS

Knut Hugo Blomberg, Lakattsrager 39, 161 37 Bromma, Sweden

Filed Feb. 23, 1971, Ser. No. 118,025
Claims priority, application Sweden, Feb. 27, 1970, 2659/70
Int. Cl. H04m 1/04, 1/72
U.S. Cl. 179—99 **9 Claims**



A switching device for a telephone instrument with a base support surface for the telephone instrument and a number of switching contacts, said contacts, together with the contacts comprised in the telephone instrument, being operated when the instrument is placed on said support surface, said contacts being adapted upon operation to perform certain desired functions, such as to connect the incoming line to an extension line.

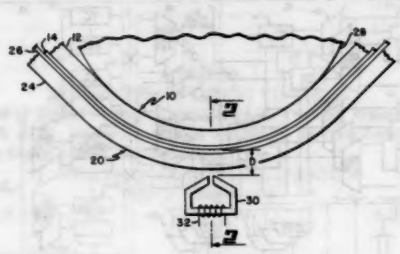
3,760,123

EFFICIENT DIRECT CONTACT TRANSFER OF LONG WAVELENGTH SIGNALS

Philip Smaller, 4155 Wilke St., Palo Alto, Calif.

Filed Apr. 7, 1972, Ser. No. 242,014
Int. Cl. G11b 5/86
U.S. Cl. 179—100.2 E **3 Claims**

A selected signal track on a master magnetic tape having other signal tracks is direct contact transferred to a copy tape. The portion of the copy tape in line with the selected signal track is magnetically biased by magnetic lines of force emanating from a high permeability magnetic structure. This structure is spaced from the copy tape a predetermined amount sufficient to prevent dispersal of the longest wavelength magnetic signals on the master tape but close enough to localize the magnetic bias on the copy tape for efficient signal transfer only of the selected signal track.

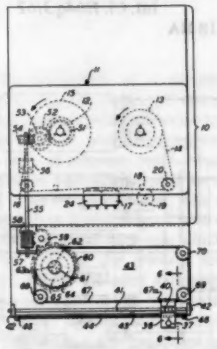


3,760,124

DICTATOR-TRANSCRIBER INDEXING SYSTEM

Thomas J. Gaven, Livingston, N.J., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Feb. 14, 1972, Ser. No. 225,799
Int. Cl. G11b 23/42, 27/12
U.S. Cl. 179—100.2 Z **5 Claims**



A new indexing system for a tape-record dictating and transcribing machine is provided wherein a dictator records distinguishing electrical indexing signals signifying length and correction marks either in superimposed relation to the audio signals or on a separate track of the tape. The transcriber then generates visible index marks on an index slip as she rewinds the tape preparatory to transcribing the dictation and utilizes the index slip in the usual way during the transcribing operation.

3,760,125

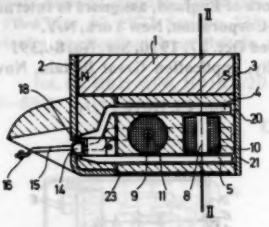
MAGNETIC PICK UP WITH FLUXBRIDGE AND REPLACEABLE STYLUS

Eckhard Laue, St. Georgen, Schwarzwald, Germany, assignor to Dual Gerbrueder Steidinger, Georgen/Schwarzwald, Germany

Filed Mar. 31, 1972, Ser. No. 240,879
Int. Cl. H04r 11/12
U.S. Cl. 179—100.41 K **4 Claims**

A stereophonic magnetic tone pickup with an armature, which distributes the magnetic flux corresponding with the needle position differently over four magnetic, parallel

disposed paths. Two oppositely disposed paths are connected by a magnetic bridge, which contains a spool. A different mag-



netic flux in the four parallel paths leads to an equalization flux over the bridge, which flux induces in turn the use voltage.

3,760,126

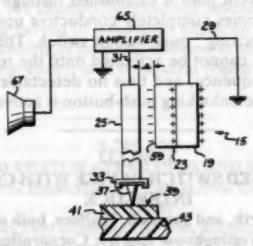
ELECTRET PHONOGRAPH PICKUP

Thaddeus V. Rychlewski, Seneca Falls, N.Y., and Abdulgafoor M. Serang, Acton, Mass., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,446

Int. Cl. H04r 23/00

U.S. Cl. 179—100.41 B **4 Claims**



An efficient kinetoelectric transducer is provided for use in a phonograph playback system. The transducer is positioned in the forward end portion of the pickup arm and includes a first electrode, an electret member oriented contiguous to the first electrode, and a second electrode juxtapositionally oriented relative to the side of the electret opposite that of the first electrode. The second electrode, which has a stylus support means attached thereto, is oriented to facilitate a degree of controlled vibratory movement relative to the electret member. A holding means retains the electrodes and intermediate electret member to effect a unitized transducer structure from which the stylus support member protrudes.

3,760,127

SYSTEM FOR THE REMOTE SUPERVISION OF MULTICHANNEL PCM REPEATERS

Roberto Camiciottoli, and Giuseppe Grossi, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

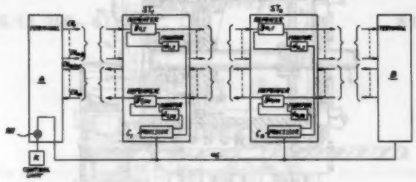
Filed Nov. 15, 1971, Ser. No. 198,788

Claims priority, application Italy, Nov. 16, 1970, 31796 A/70

Int. Cl. H04b 3/46

U.S. Cl. 179—175.31 R **10 Claims**

Groups of repeaters in *n* cascaded repeating stations of a multichannel PCM transmission system are individually tested via a supervisory d-c circuit by different interrogation codes emitted from one terminal of the transmission path, each interrogation code including a train of equispaced address pulses whose number (ranging from 1 through *n*) identifies a selected station. A control unit at the code-emitting terminal comprises a binary counter manually adjustable to count a selected number of address pulses followed in the code by a pulse interval long enough to allow for the generation of a one-pulse reply code at the station so addressed, a similar



counter at that station enabling a pulse generator to produce the reply code in the presence of consent signals from a processor receiving the outputs of *m* monitoring circuits connected across as many repeaters in each station. The processor is divided into two halves each serving a subgroup of *m*/2 repeaters used to transmit in one or the other direction.

3,760,128

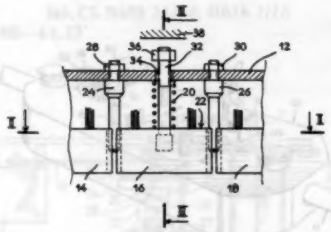
ELECTRIC CURRENT COLLECTING SYSTEM

Pierre Charamel, 38 Les Cotes De Sassenage, France, assignor to Merlin Gerin, Grenoble, France

Filed Jan. 11, 1971, Ser. No. 105,301

Int. Cl. B60l 5/38

U.S. Cl. 191—49 **2 Claims**



Electric current distribution and collecting system comprising contact shoes resiliently urged towards feed rails extending along a path of a vehicle moving at a high speed. The contact shoes are supported and guided by guide fingers which slidably engage recesses or holes provided in the shoes.

3,760,129

PROGRAMMER FOR HOUSEHOLD ELECTRIC MACHINES WITH IMPROVED CAM OPERATING MECHANISM

Jean Jullien-Davin, Valence, France, assignor to Crauzet, Paris, France

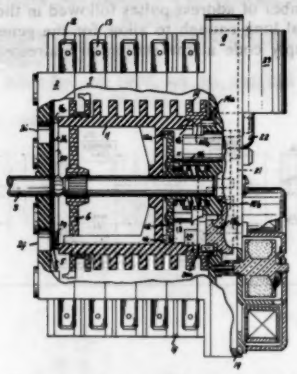
Filed June 1, 1971, Ser. No. 148,810

Int. Cl. H01h 7/08, 43/00

U.S. Cl. 200—38 R **2 Claims**

Programmer for mechanical step by step household appliances in which the output pinion of a synchronous reduction motor carries on its axis an eccentric fitted in the middle part of a lever 35, with a circular cam driven by the output pinion and acting on a self-substaining contactor to maintain

the power supply of reduction motor during a complete turn of the eccentric when a starting impulse has actually been



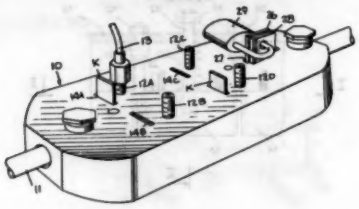
sent. The rotation of the eccentric making a driving pawl operative or inoperative at the moment when a recess of an internal profile cam 14b is in phases therewith.

3,760,130

CATV MULTI-TAP DISTRIBUTION BOX WITH A KEY ACTUATED CONNECTOR FOR EACH OF A PLURALITY OF TAPS

Joseph I. Ross, East Norwich, N.Y., and Kay G. Sears, Keyport, N.J., assignors to Entron, Inc., Glendale, N.Y., by said Sears

Filed Aug. 1, 1972, Ser. No. 277,178
Int. Cl. H01h *27/04*
U.S. Cl. 200—42 R **10 Claims**



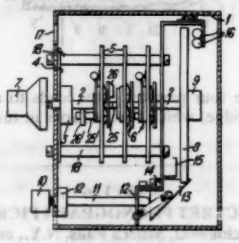
A multi-tap distribution box for a community antenna television system. The box is interposed in a primary cable carrying video and radio signals from a master station to subscribers who are linked to the cable by drop lines coupled to the taps. To prevent illegal taps, security keys are provided, each of which is insertable in a keyway associated with a tap. When fully inserted, each key is received by a connector whose circuit, in the absence of a key, is adapted to terminate the related tap and thereby prevent the transfer of signals to the subscriber, the connector circuit, in the presence of a key, rendering the tap operative. A guard system is provided which in one phase blocks all keyways to prevent the entry of keys therein, in another phase unblocks the keyways to permit insertion of keys in selected keyways, and in a third phase captures the inserted keys to prevent removal thereof, and also blocks the remaining keyways to preclude the entry of additional keys. Also provided are means to lock the guard system in the third state to maintain status quo, whereby the only taps which are operative are those which are legal.

3,760,131

ELECTRIC PERMUTATION LOCK ARRANGEMENT

Robert Brough Ford, Richmond, and Martin Herbert Lloyd, Addington, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,391
Claims priority, application Great Britain, Nov. 25, 1969, 57,600/69
Int. Cl. H01h *27/10*
U.S. Cl. 200—43 **6 Claims**



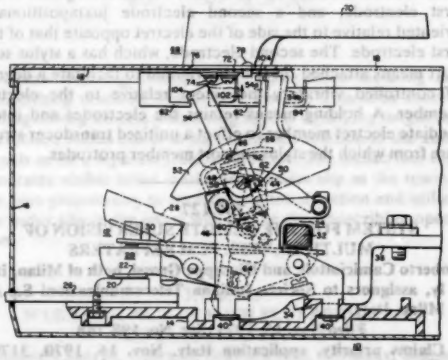
A permutation mechanism for a lock arrangement which avoids detection by stethoscope or other mechanical or electrical means. A set of multicontact rotary switches takes the place of conventional tumblers. When arranged in the correct sequence, a current path is established through the switches, which path becomes completely conductive upon the activation of an "unlocking" push-button switch. The push-button switch however, cannot be activated until the rotary switches are in proper sequence, and thus no detectable current flow can exist until the unlocking push-button is activated.

3,760,132

ENCLOSED SWITCH DEVICE WITH COVER INTERLOCK

James P. Ellsworth, and James B. Wallace, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1972, Ser. No. 245,456
Int. Cl. H01h *9/20, 33/46*
U.S. Cl. 200—50 A **7 Claims**



A switch device characterized by a switch structure within an enclosure having an openable cover and having interlock means between the switch structure and a handle on the cover for preventing opening of the cover if the contacts of the switch structure are welded in the closed-circuit position.

3,760,133

ELECTRICAL LIGHTING INSTALLATIONS

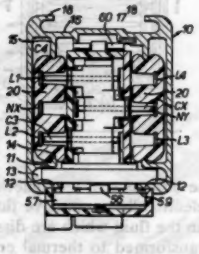
John Howard, Bovingdon, England, assignor to Rotaflex (Great Britain) Limited, London, England

Filed Mar. 27, 1972, Ser. No. 238,194

Claims priority, application Great Britain, Mar. 29, 1971, 8106/71

Int. Cl. H01r 9/00; H01h 9/20

U.S. Cl. 200—50 B 5 Claims



An appliance feeding and supporting adaptor for continuous outlet current supply installations, has retractable contacts controlled by a rotary, manual operating member arranged transversely to the mouth of the track channel of the installation, so that the adaptor housing can fit substantially wholly within the channel. Mechanical interlocks prevent the contacts being moved to conductor engaging positions unless the adaptor housing is properly inserted in the track channel and an isolating switch is in its neutral (open contact) condition.

3,760,134

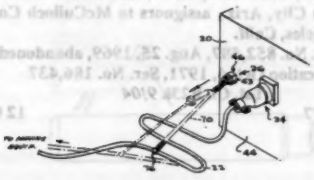
CABLE AND SWITCH APPARATUS AND METHOD FOR PREVENTING DAMAGE TO TRAILING CABLE POWER SYSTEM

Richard N. McCray, Bluefield, W. Va., assignor to Pemco Corporation, Tazewell County, Va.

Filed Aug. 3, 1972, Ser. No. 277,508

Int. Cl. H01h 17/12

U.S. Cl. 200—52 R 23 Claims



An electric power source is disclosed connected to an electrically driven movable vehicle such as a mining machine by a trailing power cable with a flexible chain connected to the cable at a point on the cable spaced from the cable connection to the power source and with the chain connected on its other end to a switch on the power source for interrupting power to the cable upon tensioning movement of the chain outwardly from the power source. The chain is of less length than the length of the cable between the point at which the chain is connected to the cable and the end of the cable connected to the power source so that the power is interrupted before the cable is tensioned and any damage to the cable or connector is consequently avoided.

3,760,135

SEAT BELT SAFETY SWITCH WITH OVERCENTER SNAP ACTING CONTACT ENGAGING BELT ACTUATING MEANS

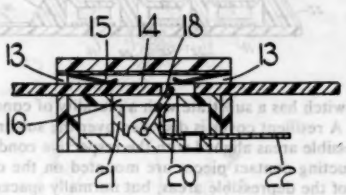
Leslie James Nevett, Clitheroe, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 11, 1972, Ser. No. 242,952

Claims priority, application Great Britain, Apr. 13, 1971, 9,268/71

Int. Cl. H01h 3/16

U.S. Cl. 200—61.58 B 8 Claims



An electrical switch for use with a vehicle safety harness has an insulating body through which a web of the harness passes. The body contains a resilient moving contact spring engageable with a hole in the web. The contact spring is biased by its own over-centering snap action to either of two stable positions, in one of which it engages a fixed contact to complete a circuit.

3,760,136

SWITCHING DEVICE FOR A TONE BAND DRIVE

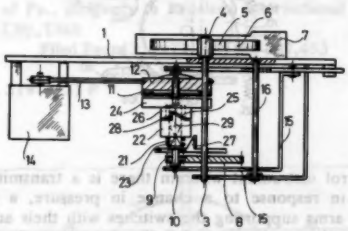
Helmut Laufer, St. Georgen/Schwarzwald, Germany, assignor to Dual Gebrueder Steidinger, Schwarzwald, Germany

Filed Jan. 17, 1972, Ser. No. 218,235

Claims priority, application Germany, Jan. 28, 1971, P 21 03 953.2

Int. Cl. B65h 25/14; H01h 3/16

U.S. Cl. 200—61.13 6 Claims

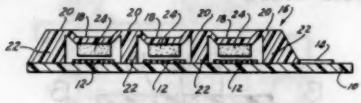


A switching device for driving of a tone band from an unwinding to a winding spool carrier, the end of said tone band being secured to said spool carrier of said unwinding tone band, which comprises drive means and a spool carrier. A drive shaft is provided for driving the spool carrier by the drive means. A disc fly-wheel mass is rotatably, but non-slidingly mounted on the drive shaft. A coupling means is disposed between the drive shaft and the disc fly-wheel mass for joining rotation of the latter. A member is adjustable against elastic means and rotatably, but non-slidingly mounted on said drive shaft. A shifting device for the member for shifting in dependency upon the transmission force of the coupling means against the force of the elastic means into an operative position, upon the transmission force being opposite as during an acceleration of the disc fly-wheel mass, and a switching device for stopping the drive, operable by the adjustable member, upon shifting the latter into its effective position.

3,760,137
MATRIX PUSH-BUTTON SWITCH

Takemi Shimojo, and Makoto Yanaga, Tokyo, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sept. 27, 1971, Ser. No. 184,107
Claims priority, application Japan, Oct. 5, 1970, 45/98909
Int. Cl. H01h 3/12
U.S. Cl. 200—166 C 4 Claims

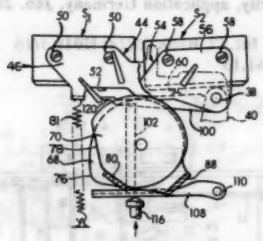


A switch has a substrate with a plurality of conductor pairs on it. A resilient cover is disposed over the substrate and has depressible areas aligned with the respective conductor pairs. Conducting contact pieces are mounted on the cover below each of the depressible areas, but normally spaced above the pairs. Upon pressing down a given depressible area, the corresponding contact piece moves to engage the conductor pair associated therewith, and thus closes the circuit between them.

3,760,138
CONTROL INSTRUMENT FOR TWO OR MORE SWITCHES

Robert D. Reis, Hingham, Mass., assignor to United Electric Controls Company, Watertown, Mass.

Filed Jan. 31, 1972, Ser. No. 222,203
Int. Cl. H01h 35/24
U.S. Cl. 200—835 A 8 Claims



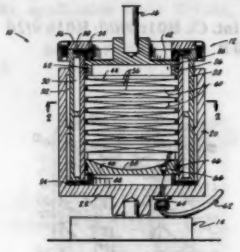
A control instrument wherein there is a transmitter bar movable in response to a change in pressure, a pair of switches, arms supporting the switches with their actuating elements adjacent the transmitter bar for movement relative to each other and to the transmitter bar, cams operably associated with the respective arms for effecting displacement of the arms and hence the switches at different distances from the transmitter bar to predetermine the operation of the switches relative to each other, pointers for indicating the points of operation of the switches and limits interengageable at a terminal position to effect actuation of said switches in predetermined relation to each other.

3,760,139
METHOD AND MEANS FOR ACOUSTIC ENERGY CONVERSION

Don B. Porter, Jr., P. O. Box 115, Neodesha, Kans.

Filed May 27, 1971, Ser. No. 147,347
Int. Cl. H05b 9/00; H02k 45/00
U.S. Cl. 219—10.65 28 Claims

A method of converting acoustic energy to another form of energy establishes a magnetic field in an electrically conductive fluid medium. Acoustic energy is passed into the electrically conductive fluid medium and converted therein into another form of energy. A conversion device receives acoustical energy passed into an electrically conductive fluid medium



which is under the influence of a magnetic field. The energy passed into the electrically conductive fluid medium causes electric currents in the fluid which are dissipated in the magnetic field and transformed to thermal energy which is dissipated by the device.

3,760,140
SUBMERGED-ARC WELDING WITH STRIP ELECTRODE AND FOAMED FLUX

Ingo Kretschmer, Lohhof, and Marjan Mursic, Munich, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

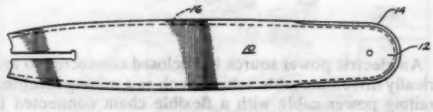
Filed Apr. 16, 1971, Ser. No. 134,906
Claims priority, application Germany, Apr. 24, 1970, P 20 20 047.9
Int. Cl. B23k 9/18
U.S. Cl. 219—73 13 Claims

To obtain higher quality welds in the submerged-arc welding of electrode strips having a width to thickness ratio above 90 : 1, there is employed a flux having a bulk density of 0.4–0.8 kg./l., e.g. a foamed flux. The process is especially applicable to the economical production of stainless steel clad vessels and the like.

3,760,141
METHOD FOR APPLYING HARD FACING TO AN OBJECT

Salvador Espana, San Pedro, Calif., and Brunson Bert Font, Lake Havasu City, Ariz., assignors to McCulloch Corporation, Los Angeles, Calif.

Division of Ser. No. 852,587, Aug. 25, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,437
Int. Cl. B23k 9/04
U.S. Cl. 219—77 12 Claims



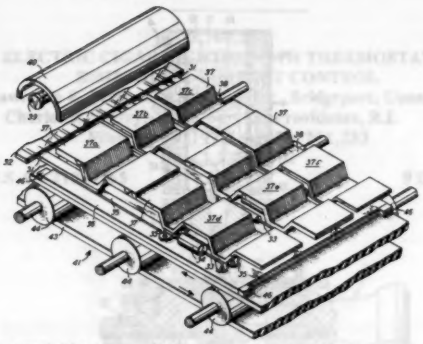
The nose of a chain saw blade is radiused along its edges. The radiused nose is then grit blasted to roughen its surface and to remove any oxides. A first layer of particulate hard facing material is applied to the radiused nose and fused to obtain a metallurgical bond between the nose and the first layer. A second layer of hard facing is then welded to the prepared first layer with an inert gas shielded arc process without marked penetration into the nose's parent material. The hard facing is then finished by grinding.

3,760,142

SOLDERING APPARATUS HAVING A NON-UNIFORM HEAT TRANSFER DISTRIBUTION

David Schoenthaler, Yardley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 31, 1972, Ser. No. 276,275
Int. Cl. B23k *1/02*
U.S. Cl. 219—85 13 Claims



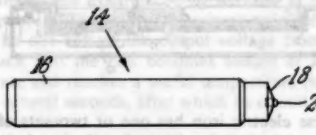
Radiantly heated tools are used for bonding leads to an array of circuit paths. The heat transfer characteristics of the tools over their area of contact with the leads and circuit paths cause a profile or contour to be formed which matches the heat capacity profile or contour of the array to the heat output contour of a heat source. The heat transfer contour of the tools may be obtained by varying parameters such as material, mass, density, specific heat and absorptivity over the contact area of the tools.

3,760,143

WELDING STUD

Herbert F. Rondeau, Winchester, Mass., and Donald H. Ettinger, Royal Oak, Mich., assignors to Warren Fastener Corporation, Mount Clemens, Mich.

Filed Jan. 3, 1972, Ser. No. 214,926
Int. Cl. B23k *9/20, 35/22*
U.S. Cl. 219—98 6 Claims



A weldable stud, especially one of high carbon steel to be drawn-arc welded to high or low carbon substrates (or vice versa), desirably includes a fluxing combination consisting essentially of nickel and aluminum. The conical end of the stud to be welded preferably has a hole in its tip for receiving a flux assembly wherein the nickel and aluminum respectively are present roughly on the order of about 30 to 70 percent by weight in novel and alternative forms for engendering austenitic joints. Resultant alloying at the fusion zone of the stud and substrate interfaces provides improved weld strength.

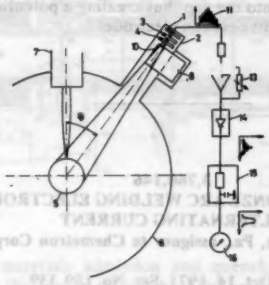
The different flux assemblies may have substantially the same outer diameter and, accordingly, one mechanism is employed for practicing a novel method of successively producing and mounting the different assemblies in studs or the like.

3,760,144

OPTIMUM FOCUSING IN AN ELECTRON BEAM WELDING MACHINE

Peter Herzberger, Canonica Di Cuveglio, and Learco Di Piazza, Angera, both of Italy, assignors to European Atomic Energy Community, Luxemburg, Luxembourg

Filed May 28, 1971, Ser. No. 148,113
Claims priority, application Luxembourg, June 2, 1970, 61.048
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB 2 Claims



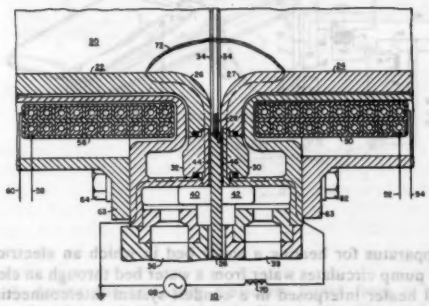
Apparatus for determining optimum focusing of an electron beam at the site of a weld wherein the electron beam is directed onto a sample and the intensity of the infra-red radiation emitted at the point of incidence between the beam and the sample is measured by means of a photoelectric cell. A radiation chopper is placed between the photoelectric cell and the samples in such a manner that particles displaced from the workpiece are deflected away from the photoelectric cell. The focus is adjusted in dependence upon the intensity of the infra-red radiation.

3,760,145

SHORT GAP ELECTRIC ARC HEATER WITH OPPOSING GAS SWIRL

Charles B. Wolf, Irwin, and Maurice G. Fey, Turtle Creek, both of Pa., assignors to Panelera International Inc., Salt Lake City, Utah

Filed Dec. 13, 1971, Ser. No. 207,453
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P 8 Claims



An electric arc heater useful in chemical processing operation where a thin annular disc is placed between two axially disposed hollow electrodes. The disc aids in channeling a gas which may be tangentially introduced into a chamber within the electrodes where chemical processing occurs. The gas flows on either side of the disc and between the electrodes to

blow electrical arclets which are struck between one electrode and the disc and between the disc and another electrode into the arc chamber, stretching the arclets transversely with respect to the axis of the arc chamber. The arclets join to form a single arc once the arclets have been blown a sufficient distance away from the electrically conducting disc. The opposing introduction of gas on either side of the disc into the arc chamber reduces net swirling and reduces centrifugal forces within the gas which otherwise may create boundary layers of cool heavy gas against the side wall of the arc chamber which would in turn cause poor temperature distribution transversely across the arc chamber and impede heat removal through the walls of the arc chamber or throw heavy process particles into the gap thus creating a potential for unwanted short circuits between electrodes.

3,760,146

PHOSPHOR BRONZE ARC WELDING ELECTRODE FOR ALTERNATING CURRENT

David Rozet, York, Pa., assignor to Chemetron Corporation, Chicago, Ill.

Filed Oct. 14, 1971, Ser. No. 189,339
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **5 Claims**

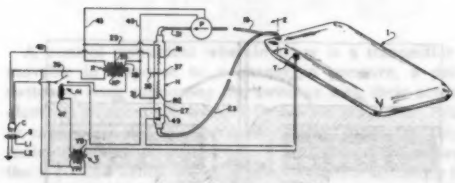
A phosphor bronze electrode including a coating of materials having a low ionization potential, i.e., easily ionized, is disclosed which is suitable for use either with direct current or alternating current having an open circuit as low as 40 volts.

3,760,147

APPARATUS FOR HEATING A WATER BED

Elasco A. Tyrey, 239 Estridge, St. Louis, Mo.

Filed June 15, 1972, Ser. No. 262,950
Int. Cl. H05b *3/78*
U.S. Cl. 219—217 **6 Claims**



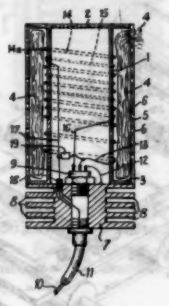
Apparatus for heating a water bed in which an electrical fluid pump circulates water from a water bed through an electrical heater interposed in a conduit system interconnecting the pump to the water bed. The electrical heater includes a resistance wholly immersed in and exposed to water flowing through the conduit system. A transformer having a primary winding connected to an a.c. line voltage power source has a secondary winding connected to supply low voltage a.c. power of approximately 30 v. or less to the resistance thereby eliminating electrical shock hazard to the user of the water bed.

3,760,148

APPARATUS FOR TREATING HAIR UTILIZING DIELECTRIC LOSSES

Georges Boudouris, Grenoble; Gregoire Kalopissis, Paris; Jean-Luc Levesque, Paris, and Paul Roussopoulos, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 20, 1971, Ser. No. 209,696
Int. Cl. A45d *2/36*; H05b *9/06*
U.S. Cl. 219—222 **6 Claims**



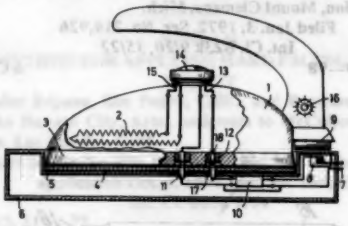
Device for treating hair by dielectric losses in which most of the high frequency current utilized is generated within or closely adjacent an electromagnetically closed jacket which holds the hair to be treated.

3,760,149

CORDLESS ELECTRIC IRON AND CURRENT-SUPPLYING MEANS THEREFOR

Eugen Harsanyi, Hauptstr. 73, Esch, near Bergheim, Germany

Filed July 14, 1971, Ser. No. 162,372
Claims priority, application Germany, July 22, 1970, P 20 36 268.9; Feb. 13, 1971, P 21 06 896.2
Int. Cl. D06f *75/28*
U.S. Cl. 219—247 **14 Claims**



A cordless electric iron has one or two sets of terminals which engage terminals in a base when the iron is deposited on the base in a single predetermined position (e.g., in a position in which the sole plate is substantially horizontal) or in one of two predetermined positions (in one of which the sole plate is horizontal and in the other of which the sole plate is vertical). The iron and the base carry the component parts of a safety device which automatically disconnects the terminals of the base from the source of electrical energy and/or which completely conceals or retracts the terminals of the base and/or the terminals of the iron in response to movement of the iron from its predetermined position on the base. This insures that the touching of terminals in the base when the iron is in use and while the base is connected with the energy source cannot cause harm to a careless operator or to another person who accidentally touches the terminals of the base. The safety device can employ a permanent magnet in the iron and a normally open switch provided in the base in such posi-

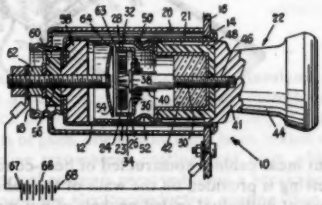
tion that it is closed by the magnet and thereby connects the base terminals with the energy source only when the iron is supported by the base in a predetermined position of rest. Also, the safety device can employ one or more relays which are energized to connect the base terminals with the energy source in response to establishment of an electrical connection between two auxiliary terminals in the base which are connected to each other by the sole plate of the iron when the latter is properly deposited on the base.

3,760,150

ELECTRIC CIGAR LIGHTER WITH THERMOSTATIC BIMETALLIC CURRENT CONTROL

Lawrence E. Fenn, 40 Anchorage Dr., Bridgeport, Conn., and Charles R. Sperry, 25 S. Court St., Providence, R.I.

Filed June 9, 1972, Ser. No. 261,233
Int. Cl. F23g 7/02
U.S. Cl. 219—265 **9 Claims**



An instant cigar lighter comprising a holder adapted for mounting on an automobile dashboard, an elongate igniter plug receivable in the holder and having a spiral heating coil disposed at its inner end, a metal cup surrounding the heating coil and at one end connected thereto, and means for establishing an electrical circuit through the cup and heater coil to enable energization of the latter. The lighter is intended for use with a source of power having a higher voltage than the voltage rating of the coil, and has special heat responsive means comprising a bimetal disk engageable with the rim of the cup and closely juxtaposed to the heating coil for substantially instantly opening the circuit in response to heating of the coil to a useful predetermined temperature. The bimetal disk and the metal cup can cooperate to constitute a tightly closed enclosure closely surrounding the heating coil, the disk comprising one large wall of the enclosure whereby heat from the coil is immediately experienced by the disk to effect a very rapid response of the latter. The voltage rating of the heating coil can be one-half of the output voltage from the power source such that the coil becomes heated at a greatly increased rate and reaches a useful temperature in a period of less than several seconds, after which its circuit is opened to prevent burn-out.

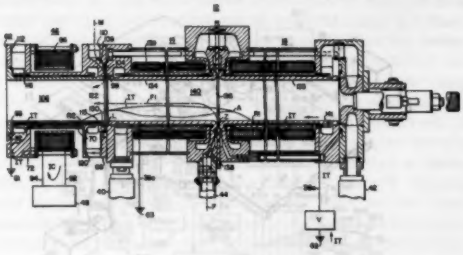
3,760,151

ARC DETECTING MATERIAL ADMISSION APPARATUS FOR USE IN COMBINATION WITH AN ELECTRIC ARC HEATER

Charles B. Wolf, Irwin; Maurice G. Fey, and Frederick A. Azinger, Jr., both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 11, 1972, Ser. No. 279,894
Int. Cl. H05b 7/18
U.S. Cl. 219—383 **16 Claims**

A materials admission or quench tube assembly disposed downstream of an electric arc heater, this assembly being disposed adjacent to the downstream electrode of the electric arc heater but insulated therefrom, the assembly having the capability of admitting quench material to a stream of gas which has been previously heated by an arc in the upstream heater or being capable of providing process material to that stream or both, the materials admission and quenching assembly having as an integral part thereof an electrical current transformer electrically connected to an indicating or control means. In the event a root of an electric arc which normally resides or strikes against the downstream electrode in the arc heater strikes against an internal portion of the materials admission and quenching tube the electrical current flowing from the root of the arc which has struck the internal portion



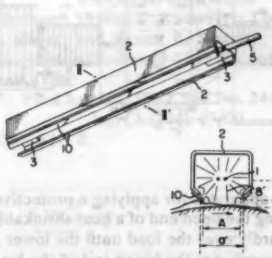
of the materials admission and quenching tube will flow through the region enclosed by the current transformer and returned to ground through a suitable ground connection. The flow of current through the region enclosed by the current transformer will energize the current transformer to an extent sufficient to cause the indicating or control means electrically connected to the current transformer to reach to the current and therefore provide an indication of the fact that the root of an arc has struck an internal part of the materials admission and quenching structure and compensate therefor if desirable.

3,760,152

CORONA DISCHARGE DEVICE FOR REMOVING DIELECTRIC LIQUID

Takashi Saito, Tokyo, and Yujiro Ando, Yokohama-shi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1972, Ser. No. 229,540
Claims priority, application Japan, Mar. 1, 1971, 46/10501
Int. Cl. H05b 7/18
U.S. Cl. 219—384 **11 Claims**



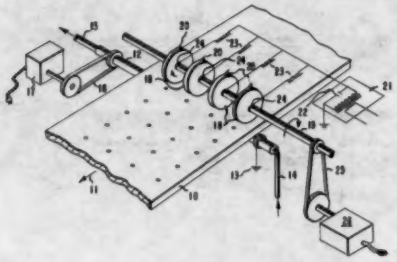
A device for removing dielectric liquid from a holder member for a photosensitive medium or the like used in an electrophotographic copying machine includes a corona discharging electrode, a shield member substantially surrounding the corona discharging electrode in electrically isolated relationship therewith and having at least a discharge opening, corona discharge converging means provided adjacent to the discharge opening of the shield member, and a power source from which a voltage is applied to the corona discharge electrode.

3,760,153

APPARATUS FOR PERFORATING THERMOPLASTIC SHEET MATERIALS WITH AN ELECTRIC ARC

Robert Dillwyn Davies, Wilmington, Del., and Leslie Yarnall Weston, Jr., Avondale, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1972, Ser. No. 226,804
Int. Cl. H05b 7/18
U.S. Cl. 219—384 3 Claims



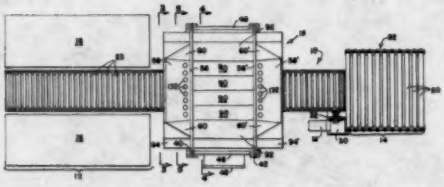
Apparatus for perforating thermoplastic sheets by controlled high current density electric arcing through the sheet, wherein the high current density arc is established between electrically charged and grounded electrodes, both electrodes comprising discs having at least one pin mounted on the periphery thereof, the discs synchroneously rotating such that a grounding pin opposes a charged pin at the desired spacing of perforations to cause an electric arc to form said perforations.

3,760,154

APPARATUS FOR HEAT-SHRINKING A PLASTIC FILM ON A LOAD

Alfred P. Konger, McHenry, Ill., assignor to Signode Corporation, Chicago, Ill.

Filed Feb. 29, 1972, Ser. No. 230,427
Int. Cl. F27b 9/06
U.S. Cl. 219—388 5 Claims



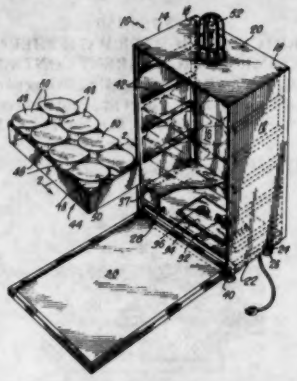
A method and apparatus for applying a protective covering to a load by pulling the open end of a heat-shrinkable inverted film bag downwardly over the load until the lower rim of the bag appreciably overhangs the lower end of the load, initially directing infrared radiant heat on the overhanging rim region of the bag to rapidly shrink the same beneath the load, subsequently directing additional infrared heat inwardly through the sides and closed top of the bag and against the load to establish surface heating of the load and consequent outward reflection of infrared heat through the sides and top of the bag to enhance and rapidly shrinking thereof with a consequent pulling of the underlying pre-shrunk rim region of the bag upwardly to thus establish a seal between such rim region and the bottom of the load and inhibit escape of heated air from the bag, such shrinking of the sides of the bag serving to place the thus covered load under both horizontal and vertical compression.

3,760,155

HEATING CABINET FOR TREATING NUT MEATS

Maurice I. Polansky, Montreal, Quebec, Canada, assignor to Quebec Vending Machine Co., Inc., Montreal, Quebec, Canada

Filed Aug. 28, 1972, Ser. No. 284,397
Claims priority, application Canada, Sept. 13, 1971, 122721
Int. Cl. F27d 11/02; A21b 1/00
U.S. Cl. 219—399 1 Claim



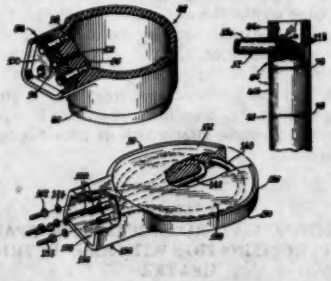
A nut meat cabinet constructed of heat-conductive material. Shelving is provided on the walls of the cabinet for receiving trays of individual sealed packets of nut meats, wherein a portion of the packet is of conductive material and a heating element is fixed to one of the walls of the cabinet so as to heat the enclosed chamber formed by the cabinet by conductive heat.

3,760,156

DETACHABLE ELECTRICAL HEATING GRIDDLE

Lawrence Joseph Kehl, North Riverside; Irvin Richard Triner, Stickney, and Robert Gerald Janis, Cicero, all of Ill., assignors to the Bunker-Ramo Corporation, Oak Brooks, Ill.

Division of Ser. No. 79,409, Oct. 9, 1970, Pat. No. 3,683,150.
This application Dec. 27, 1971, Ser. No. 212,796
Int. Cl. H05b 3/68
U.S. Cl. 219—447 4 Claims



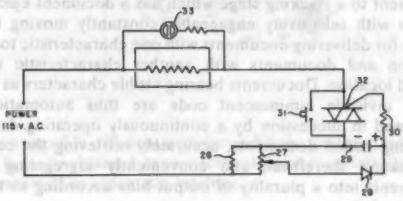
An electrically heated griddle for detachably mounting in a cantilever fashion to a mounting member, including heating and sensing elements internally imbedded in a thin, flat plate with terminals on said elements for engagement with contacts of the mounting member, and an integral mounting arm extending radially from the periphery of the plate with a polygonal portion for telescoping and frictional engagement in a predetermined position on the mounting member and including an enlarged solid portion adjacent the plate with said terminals being grouped therein and extending therethrough for engagement with said contacts.

3,760,157

ELECTRICALLY HEATED WINDOW WITH CONNECTOR BLOCK AND A CIRCUIT BREAKER

Irvin Newman, Cherry Hill, N.J., and Roy Strengholt, Holland, Mich., assignors to Thermoseal Glass Corporation, Camden, N.J.

Filed July 11, 1972, Ser. No. 270,856
Int. Cl. H05b 3/06
U.S. Cl. 219—522 5 Claims



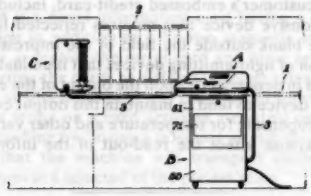
An electrically heated window including an insulated corner gusset having an electrical lead extending therethrough to supply electrical power to one sheet of a plurality of parallely-arranged sheets of glass, one of which has been coated with an electroconductive transparent coating, and from which the supply of electrical power is removed upon a breakage of the glass sheet having the electroconductive coating, thus avoiding the possibility of an individual being subjected to an electrical shock by coming into contact with the broken glass.

3,760,158

CASH DISPENSING APPARATUS

James Whitehead, Harpenden, and Stuart McEwen Jenkins, Rowlands Castle, both of England, assignors to De La Rue Instruments Limited, London, England

Filed May 28, 1971, Ser. No. 147,741
Int. Cl. G06k 15/00, 15/06; G07f 11/00
U.S. Cl. 235—61.6 R 36 Claims



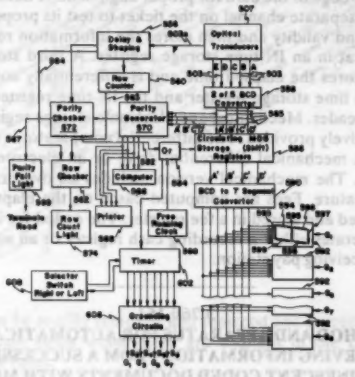
A machine for dispensing banknotes of a plurality of different denomination comprising means for storing a corresponding plurality of stacks of banknotes, each such stack containing banknotes of a single denomination, means for selectively removing individual banknotes from each such stack, means for transporting the banknotes so removed to a dispensation station, means for sensing the passage of each banknote through the transportation means, means for selecting the value of money to be dispensed in each denomination, and means for causing the dispensation from each stack of the number of notes equivalent to the value selected in the corresponding denomination.

3,760,159

ENCODING AND VERIFYING INFORMATION

Louis E. Davis, Bountiful; Billy M. Jensen, Sandy; Floyd L. Larson, Granger; Rainer F. Huck, and Stephen L. Stumph, both of Salt Lake City, all of Utah, assignors to Bio-Logics Products, Inc., Salt Lake City, Utah

Division of Ser. No. 850,978, Aug. 12, 1969, abandoned. This application Jan. 14, 1972, Ser. No. 217,774
Int. Cl. G06k 15/00; G08b 5/36
U.S. Cl. 235—61.6 R 3 Claims



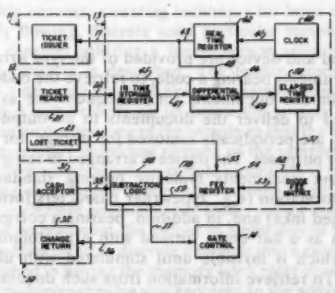
Method and apparatus for encoding a device presenting rows of encodable sites and for verifying the correctness of the encoding of such a device, the apparatus including a ram assembly for press-fitting balls or the like, received from a ball-feeder assembly, into selected ones of the encodable sites, which sites take the form of blind cavities. The encodable device is light-transmitting and, after being encoded, the rows of sites are successively sensed by an optical reader to verify the accuracy of the encoding procedure. Electrical signals, derived from optical signals generated by the reader and representing the code of each row, are converted to Binary Coded Decimal (BCD) data format and stored in a circulating shift register in a row-by-row fashion so that the stored information can be subsequently converted into human readable form.

3,760,160

AUTOMATIC FEE DETERMINING SYSTEM FOR PARKING GARAGES

Carl K. Gieringer; Vernon T. Kleimeyer; Thomas J. Schinner; Paul A. Singer, and Ernest B. Zimmer, all of Cincinnati, Ohio, assignors to Cincinnati Time Recorder Company Inc., Cincinnati, Ohio

Filed Apr. 14, 1972, Ser. No. 244,009
Int. Cl. G06k 15/00
U.S. Cl. 235—61.7 R 11 Claims



An automatic fee determining system is provided with a real time clock associated with a storage register for recording in

encoded form the identification of a given 15-minute time interval of the day. A ticket issuer is positioned adjacent the entry lane of a parking facility to encode the entry time upon the ticket information from the real time storage register. The information is encoded by passing the ticket beneath continuously energized tone heads which place BCD codes on the tickets. Switching of the signal to the tone heads in response to the position of the tickets at the issuer provides for multiple digit encoding in longitudinally spaced relationship on the tickets. The tone heads are transversely movable and register with the edge of the card for proper alignment. A ticket reader reads a separate channel on the ticket to test its proper orientation and validity and then stores the information read from the ticket in an IN-time storage register. A third storage register stores the elapsed time and is differentially coupled to the real time storage register and the IN-time register loaded by the reader. Mechanical and electronic storage registers are alternatively provided. The differential comparator is similarly either a mechanical differential drive or an electronic comparator. The mechanical version includes an overdrive anti-slack feature. Fees are computed based on the elapsed time computed and stored in a fee register. The coded fee information operates either a recording cash register or an automatic cash-receiving pay station.

3,760,161

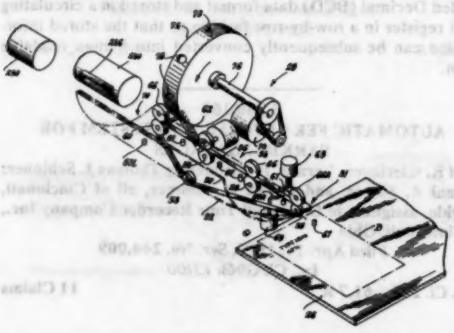
METHOD AND APPARATUS FOR AUTOMATICALLY RETRIEVING INFORMATION FROM A SUCCESSION OF LUMINESCENT CODED DOCUMENTS WITH MEANS FOR SEGREGATING DOCUMENTS ACCORDING TO THEIR CHARACTERISTICS

William E. Lohne, New Hope, Pa.; John R. Montgomery, Trumbull, Conn.; Jay L. Carley; Richard Darling, both of Fairfield, Conn., and William R. Smith-Vaniz, Darien, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 19, 1971, Ser. No. 144,877

Int. Cl. G11b *5/74*; G06k *9/04*, *7/12*, *13/06*

U.S. Cl. 235—61.11 E **7 Claims**



A method and device are provided of the type arranged to accept documents bearing a code, to retrieve the coded information from the documents for subsequent use as electric signals, and to deliver the documents to an output station where they are periodically removed for storage, for mailing, or for other purposes. The device is arranged to retrieve information from documents typically bearing standard typographic information (e.g., typewriter characters formed with carbon-based inks) and, in addition, bearing a corresponding code, such as a bar code, formed with a photoluminescent material which is invisible until stimulated with ultraviolet radiation. To retrieve information from such documents, the device feeds the documents through a scanning stage which detects the luminescent code and supplies a corresponding electrical signal, and then through a stacking stage which segregates the documents according to information contained thereon or according to a determination that the documents have been processed either acceptably or unacceptably. The scanning stage retrieves information by guiding the document through a region illuminated only with ultraviolet light, causing only the luminescent areas to emit radiation, and stationing in this region a scanning wheel which successively passes a scanning field, optically coupled to a photodetector, across the document. The scanning wheel is preferably provided with a plurality of peripheral lenses which focus an image of the document, which is held in a arcuate guide, to a central fixed photodetector. After scanning, the document feed carries the document to a stacking stage which has a document ejection station with selectively engageable constantly moving feed means for delivering documents with one characteristic to one location and documents with another characteristic to a second location. Documents bearing visible characters as well as an invisible luminescent code are thus automatically processed in succession by a continuously operating device receiving coded documents, accurately retrieving the coded information therefrom, and conveniently segregating the documents into a plurality of output bins according to their characteristics.

3,760,162

PHOTOELECTRIC READERS

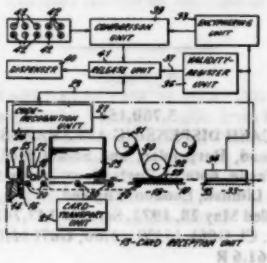
Godfrey George Holter, Cheltenham, England, assignor to Smiths Industries Limited, London, England

Filed Nov. 9, 1970, Ser. No. 88,015

Claims priority, application Great Britain, Nov. 13, 1969, 55,594/69

Int. Cl. G06k *7/14*, *19/08*, *9/04*; G01n *21/30*

U.S. Cl. 235—61.11 E **2 Claims**



A photoelectric reader used in a money-dispensing system to read information that is impressed on a punched-card blank by a bank-customer's embossed credit-card, includes an extra photo-responsive device that receives reflected light from a part of the blank outside the field of the impressions. Serial energization of light-emitting devices that illuminate the blank is regulated in dependence upon the output of the extra photo-responsive device to tend to maintain this output constant and thereby compensate for temperature and other variations that would otherwise affect the read-out of the information-imprint.

3,760,163

PROGRAMMING DEVICE

Hirotugu Takano, and Toshitsugu Inoue, both of Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 14, 1971, Ser. No. 152,807

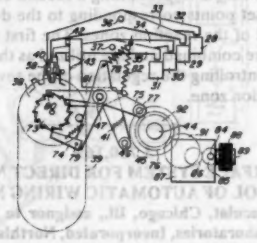
Claims priority, application Japan, June 19, 1970, 45/53681; June 19, 1970, 45/53682; June 19, 1970, 45/53683; July 20, 1970, 45/64112

Int. Cl. G06k *7/04*

U.S. Cl. 235—61.11 C **3 Claims**

A programming device comprising a plurality of code pins each supplying a multiplicity of different kinds of information,

a plurality of switches for converting such information into electrical signals, and an endless belt on which the code pins



are arranged in different manners, whereby required information is easily obtained as an electrical signal for controlling the operation of an automatic machine.

3,760,164

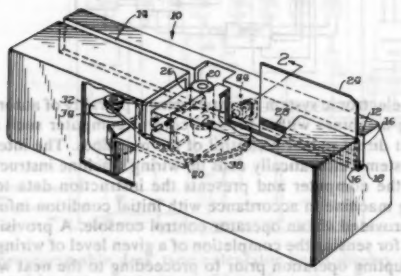
MAGNETICALLY STRIPED CARDS FOR USE IN A SPEED MACHINE

Fred G. Karl, Lake Villa, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 67,451, Aug. 27, 1972, Pat. No. 3,712,973. This application Nov. 10, 1972, Ser. No. 305,399

Int. Cl. G09b *19/04*; G06k *19/08, 7/06, 7/08*

U.S. Cl. 235—61.12 N **4 Claims**



Disclosed is a novel information card having a conductive control stripe in addition to a known magnetic stripe and a machine for accepting the novel card and prior art cards and for transporting the cards at different pre-set rates depending on the rate at which the card was transported when recorded. The control stripe on a card actuates a control circuit of the transport machine by closing a selecting circuit through a card sensor so that the machine will transport cards with and without stripes at a selected of the pre-set rates.

3,760,165

CURRENCY CONVERTER

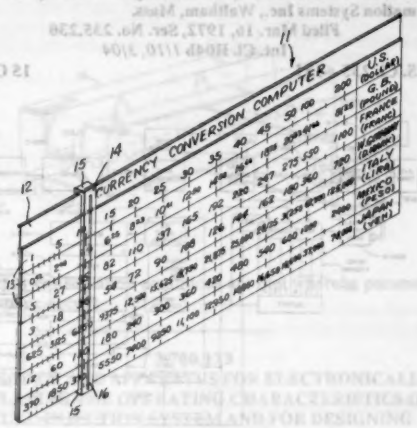
Frederick C. Marcks, 505 Old Mill Road, Easton, Pa.

Filed June 27, 1972, Ser. No. 266,634

Int. Cl. G06c *3/00*

U.S. Cl. 235—89 R **9 Claims**

A foreign currency converter consisting of an elongated body carrying a series of parallel longitudinal removable currency scale strips including a United States dollar scale strip, with the dollar currency values aligned with the corresponding foreign currency values. A slide with an index line is mounted transversely on the body for aligning the respective corresponding currency values. The scale strips have lugs providing a snap fit with apertures in the body. The original scale



strips can be readily removed and replaced and corrected currency scale strips when there are changes in the currency exchange rates.

3,760,166

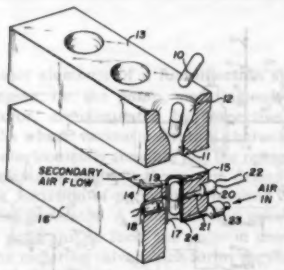
RANDOM FLOW COUNTER

Jim Mills Adams, West Caldwell, and William Charles Grimmell, Lake Hiawatha, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Dec. 8, 1971, Ser. No. 206,065

Int. Cl. G06m *1/272*

U.S. Cl. 235—92 PK **6 Claims**



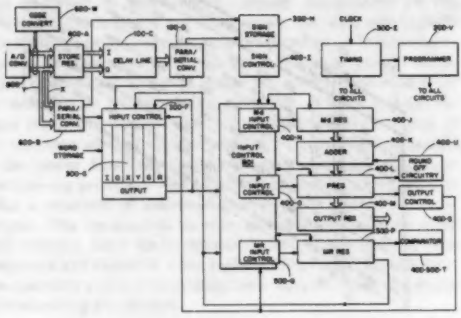
A highly accurate counting technique for large numbers of randomly flowing, discrete solid particular sample materials such as capsules utilizing a feeder-sensor assembly and associated circuitry is described. The feeder-sensor assembly employs a pressure gradient along the sample passageway induced by a high-velocity air jet below the sensing element to effectuate proper spacing of the sample so that the sensing element can register individual passage of the samples. A secondary air flow which assists in sample separation is provided by employing an air space between the sample imput cavity and the sensor element position of the feeder sensor assembly. In a preferred embodiment the output of a plurality of feeder-sensor assemblies is fed to discrete channels into a counter circuit distinguished in having the memory latch reset controlled by a delayed multiplexer pulse synchronized to the address counter output. Thus, a reset pulse is supplied to the memory latch only if it were previously set.

3,760,167

PHASE JITTER SPECIAL PURPOSE COMPUTER

Rex A. Schrimshaw, Tampa, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 16, 1972, Ser. No. 235,230
Int. Cl. H04b *1/10, 3/04*
U.S. Cl. 235—151 **15 Claims**



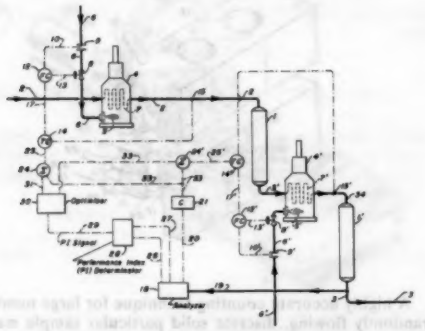
A special purpose computer for correcting phase jitter of a communication channel. The computer performs a predetermined algorithm for estimating the phase jitter of the communication system and delaying the data signals so that their delay is equal to the carrier phase estimation delay at the point where the final carrier phase correction is applied.

3,760,168

REACTION ZONE CONTROL

David M. Boyd, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 24, 1971, Ser. No. 146,400
Int. Cl. C10g *35/04*; C07c *15/10*; G06g *7/58*
U.S. Cl. 235—151.12 **14 Claims**



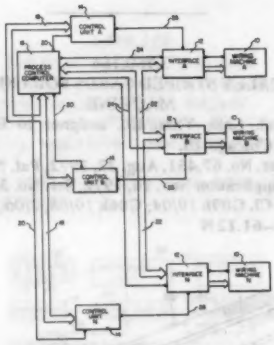
The method and means of controlling the output of a multi zone reaction installation about a desired conversion level and at optimum performance conditions. An input to the reaction installation is regulated to regulate the severity of reaction in individual zones and such regulation is controlled by means including a regulatable set point for each reaction zone. The discharge effluent from the downstream reaction zone is analyzed and the signal responsive to the character of such effluent is used first to determine a performance index output signal and secondly for determining the total conversion level. An optimizer utilizes the performance index output signal to determine a first output signal for each reaction zone representing a first component of each regulatable set point. The optimizer analyzes the performance index output signal and then determines a first output signal necessary for each reaction zone to approach an optimum performance in the reaction zones. A controller utilizes the signal indicative of the conversion level of the reaction zones and determines a second output signal representing a second component of the regulatable set points corresponding to the desired total conversion level of the reaction zones. The first and second output signals are combined and are utilized as the regulatable set points for controlling the regulation of the severity of reaction in each reaction zone.

3,760,169

INTERFACE SYSTEM FOR DIRECT NUMERIC CONTROL OF AUTOMATIC WIRING MACHINES

Robert E. Paculat, Chicago, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Sept. 18, 1972, Ser. No. 290,037
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.1 **21 Claims**



An electronic system for interfacing a plurality of automatic wiring machines with a process control computer such as to permit direct numeric control of the machines. The interfacing system automatically calls up wiring machine instructions from the computer and presents the instruction data to the wiring machine in accordance with initial condition information provided via an operator control console. A provision is made for sensing the completion of a given level of wiring and interrupting operation prior to proceeding to the next wiring level.

3,760,170

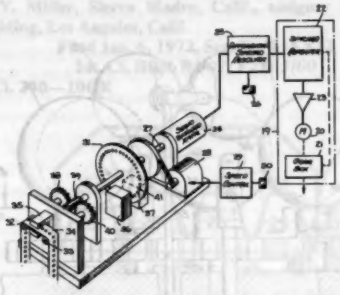
METHOD AND APPARATUS FOR AUTOMATIC CONTROL

Theodore Weber, Jr., Nyack, N.Y., assignor to Cam Technology, Inc., Elmsford, N.Y.

Continuation-in-part of Ser. No. 63,114, Aug. 12, 1970, abandoned. This application Mar. 19, 1971, Ser. No. 126,164
Int. Cl. G06f *15/46*; G05b *19/30*
U.S. Cl. 235—151.11 **17 Claims**

The position Y of one member relative to the position Z of a second member is controlled in accordance with a prerecorded schedule such that $Y = f(Z)$ where Z is subject to independent control and data is recorded representative of the slope of the function for successive equal increments of Z. Only the six least significant digits of the slope are recorded, the next three significant digits are manually inserted in the apparatus and up dated subject to the carry requirements inferred from the entry of the six least significant digits. The nine-digit slope quantum is then algebraically added R' times to an accumulated ordinate representation shifted down *s*

places in a register having more than *s* places. The number is effectively divided by this procedure and is added a sufficient

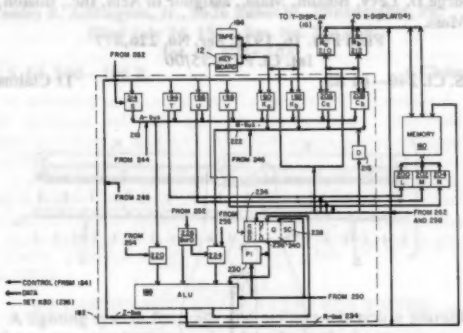


number of times to recover the initial magnitude but at a slower rate. The recovered number is used for controlling the Y member.

3,760,171
PROGRAMMABLE CALCULATORS HAVING DISPLAY MEANS AND MULTIPLE MEMORIES

An Wang, Lincoln; Harold Stanley Koplow, Peabody, and Shu-Kuang Ho, Chelmsford, all of Mass., assignors to Wang Laboratories, Inc., Tewksbury, Mass.

Filed Jan. 12, 1971, Ser. No. 105,875
Int. Cl. G06f *15/00, 15/02*
U.S. Cl. 235—156 **16 Claims**



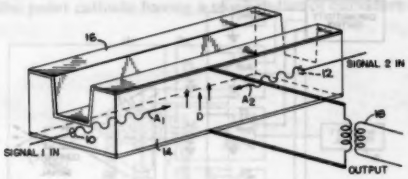
A programmable desk type calculator has a display and a keyboard having a first group of keys for entering numerical values, a second group of keys for entering instructional values including subroutine designators, and a key for causing the calculator to display an extended precision result. The calculator also has a first memory for storing instructional and numerical values, a second memory for storing a plurality of fixed control words, each of which has a plurality of control fields and an arithmetic unit for operating on numerical values in accordance with a series of control words selected in response to an instructional value for producing a result which is displayed directly.

3,760,172
METHOD OF AND APPARATUS FOR SIGNAL PROCESSING

Calvin F. Quate, Los Altos Hills, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed June 15, 1970, Ser. No. 46,248
Int. Cl. G06g *7/19*; H01v *7/00*; 332 *26*
U.S. Cl. 235—181 **26 Claims**

Method of and apparatus for convolution and correlation of electromagnetic signals by application of two signals to a piezoelectric medium to establish two acoustic waves which are propagated in a fashion such that phase matching and

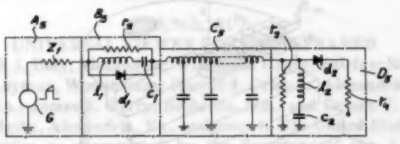


frequency conservation conditions are met whereby parametric coupling occurs.

3,760,173
METHOD OF AND APPARATUS FOR ELECTRONICALLY SIMULATING THE OPERATING CHARACTERISTICS OF A FUEL-INJECTION SYSTEM AND FOR DESIGNING SAME

Mihai Boita, Bucharest, Romania, assignor to Institutul de Crecetari Energetice Industriale si Proiectari Utilaje Energetice, Bucharest, Romania

Filed Nov. 9, 1971, Ser. No. 196,935
Int. Cl. G06g *7/57*
U.S. Cl. 235—184 **6 Claims**



The four major elements of a fuel-injection system for a combustion engine, i.e. the pump, metering valve, pressure line, and injector, are simulated by respective electronic analog networks whose various operating characteristics can be adjusted to electronically simulate just the operating conditions of these elements whereby the system design can be optimized by the variation-of-parameters method. The pump analog is a pulse generator. A pulse-shaping network is connected to this generator to form the pulse in analogy to the operation of the metering valve which forms the fluid pulse of the pump. An electronic delay circuit simulates the action of the pressure line and another shaping network replaces the injector. Shunt switches are provided to bypass both the first shaping network and the delay network to duplicate the performance of fuel-injection systems without a metering valve and/or pressure line.

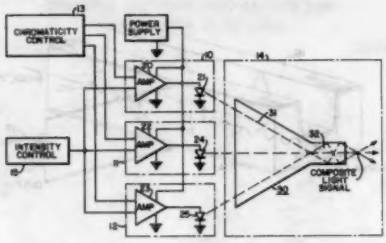
3,760,174
PROGRAMMABLE LIGHT SOURCE

Robert A. Boenning, and Anthony T. Nasuta, Jr., both of Baltimore, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 31, 1972, Ser. No. 258,376
Int. Cl. G03b *15/02*; F21v *9/00*
U.S. Cl. 240—1 R **8 Claims**

A programmable light source in which the intensity and chromaticity of the light output signal can be modulated in accordance with a predetermined program is disclosed. The out-

put of a plurality of light emitting diodes is combined in a light funnel to produce a composite light signal. The current

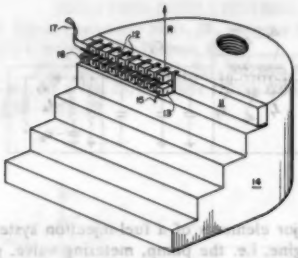


through each of the diodes is selectively controlled to intensity and chromatically modulate the composite signal.

3,760,175
UNCOOLED GALLIAM-ALUMINUM-ARSENIDE LASER ILLUMINATOR

Steve B. Gibson, Manassas; William B. Lyttle, Fairfax, and Andy J. Repasy, Alexandria, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 22, 1972, Ser. No. 291,521
Int. Cl. F21v
U.S. Cl. 240—1 EL **9 Claims**



A compact room temperature laser illuminator is provided. A cylindrical design allowing both radial and axial power and heat flow is employed. A stepped heat sink provides adequate cooling for close packed diodes. Shape and placement of electronic and optical elements as well as their composition materials are combined to insure unusually high reliability, small size, and low weight.

ERRATUM

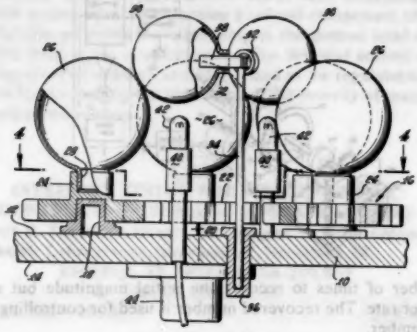
For Class 240—7 see:
Patent No. 3,759,084

3,760,176
LIGHT MACHINE

Lawrence B. Trop, 3714 Englewood Blvd., Los Angeles, Calif.

Filed Sept. 24, 1971, Ser. No. 183,530
Int. Cl. F21p *3/00*
U.S. Cl. 240—10.1 **3 Claims**

A machine for generating multicolored moving light patterns in which light from a source is projected through a plurality of counterrotating transparent globes onto a translucent cover so that constantly changing, never repeating colored

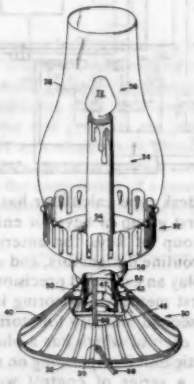


light patterns are visible on the surface of the translucent cover.

3,760,177
LIGHTING DEVICE

George D. Levy, Boston, Mass., assignor to Acia, Inc., Boston, Mass.

Filed Feb. 16, 1972, Ser. No. 226,877
Int. Cl. F21v *35/00*
U.S. Cl. 240—81 BS **11 Claims**



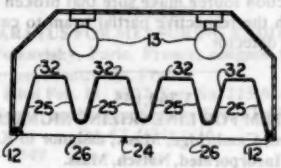
The lighting device, preferably in the form of an electrified hurricane lamp, comprises a base, a holder, and a hollow simulated candle assembly which are fitted together as a unitary piece, and a chimney which is accommodated by the holder. The candle assembly includes a hollow member having a lower portion for mating with an opening in the base and a tapered upper portion for mating with a passage in the holder, and a socket and bulb arrangement disposed at a top end of the hollow member and having conductor wires for connecting to a power source. The hollow member preferably includes an annular ridge disposed intermediate the lower portion and tapered upper portion for limiting the position of the base and holder relative to the candle assembly.

3,760,178

VARIABLE DENSITY DIFFUSER FOR LIGHTING FIXTURES

Jack V. Miller, Sierra Madre, Calif., assignor to Sunbeam Lighting, Los Angeles, Calif.

Filed Jan. 6, 1972, Ser. No. 215,822
Int. Cl. H05b 33/02; F21v 5/00
U.S. Cl. 240—106 R 21 Claims



A new form of diffuser for fluorescent luminaires constituting a unitary sheet of translucent material formed with a number of deep recesses framed by planar edge portions. The material defining the recess is of variable thickness and at its greatest depth less than half of the material at the edge portions. In certain embodiments the edge regions are metallized.

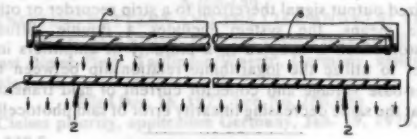
In certain embodiments the recesses are asymmetrical longitudinally with respect to the lamp with a preferred direction of light radiation at an angle α.

3,760,179

INDIRECTLY LIGHTED PANELS FOR WALLS AND CEILINGS

Conley R. Addington, Jr., 9626 Banes St., Philadelphia, Pa.

Filed July 24, 1972, Ser. No. 274,469
Int. Cl. F21v 5/00
U.S. Cl. 240—106 R 6 Claims



A lighting system for walls and ceilings wherein a plurality of transparent plastic panels of uniform thickness are positioned in adjacent edge spaced relation to a wall or ceiling surface, with each panel having secured to the outer surface thereof a compacted plurality of fiberglass pile or nap of uniform length secured substantially normal to the outer surface of the panel for uniformly transmitting artificial light positioned between the inner surface of the said panels and the adjacent wall or ceiling through said panels and from the ends of fiberglass pile.

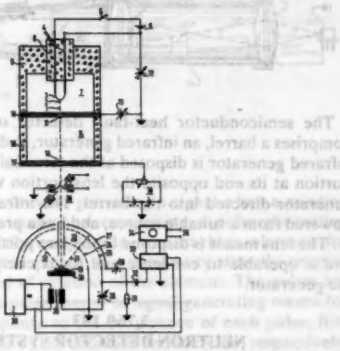
3,760,180

ELECTRON-BEAM MICRO-ANALYZER WITH AN AUGER ELECTRON DETECTOR

Ulrich Weber, Karlsruhe, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 12, 1972, Ser. No. 297,017
Claims priority, application Germany, Oct. 14, 1971, P 21 51 167.1
Int. Cl. G01n 23/20; G01t 1/36
U.S. Cl. 250—49.5 PE 15 Claims

An electron-beam micro-analyzer for investigating solid test specimens and radiation penetrable test specimens is disclosed. The micro-analyzer has an electron-beam generator for directing a focussed electron beam unto the test specimen to release Auger electrons therefrom. An electron spectrometer then separates the released Auger electrons according to the respective kinetic energies thereof and an electron detector detects the Auger electrons of specified energy separated in the spectrometer. The electron-beam generator has a field-emission point cathode having a small radius of curvature and



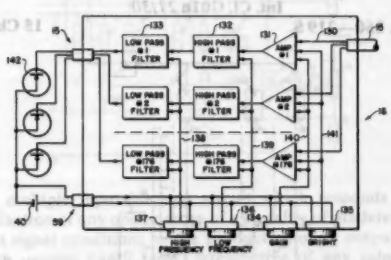
an anode having an opening for passing the electron beam therethrough. A voltage supply applys a voltage to develop an electric field between the anode and the point cathode of sufficient strength to excite the cathode to electron field emission. A deceleration lens disposed intermediate the anode and the test specimen reduces the velocity of the electrons of the electron beam passing from the opening of the anode.

3,760,181

UNIVERSAL VIEWER FOR FAR INFRARED

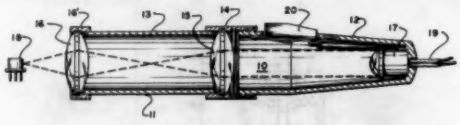
Patrick J. Daly, Alexandria; William E. Grogg, Fairfax; Stuart F. Layman, Woodbridge; Harold J. Orlando, Alexandria, all of Va.; James E. Perry, Bethesda, Md., and Dennis P. Van Derlaske, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 3, 1972, Ser. No. 231,545
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 H 10 Claims



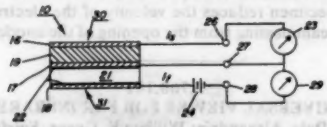
The viewer is an all solid-state device employing diode detectors and display diodes of the light emitting type. Mechanical-optical scanning is employed to economize on diodes and to avoid the use of tube scanners. Novel optical arrangements are provided particularly in the IR portion of the device to provide a broad range of operation with a minimum of critical optical components. The image quality is maximized by a special configuration of the diode arrays and novel processing techniques of the analog electrical signals generated.

3,760,182
SEMI CONDUCTOR HEAT-FAULT DETECTOR
Clarence A. Poole, 3 N. 40th Ave., Yakima, Wash.
Filed Feb. 29, 1972, Ser. No. 230,433
Int. Cl. H01j 35/00; G01t 1/16
U.S. Cl. 250—492 4 Claims



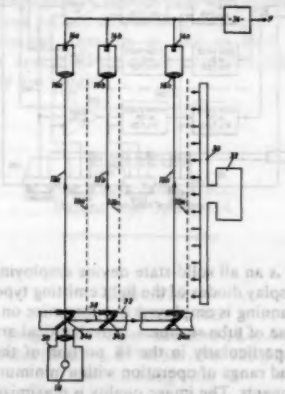
The semiconductor heat-fault detector of this invention comprises a barrel, an infrared generator, and lens means. The infrared generator is disposed at the terminal end of the body portion at its end opposite the lens portion with the infrared generator directed into the barrel. The infrared generator is powered from a suitable source, and has a preselected intensity. The lens means is disposed in the lens portion of the barrel, and is operable to condense and focus energy emitted from the generator.

3,760,183
NEUTRON DETECTOR SYSTEM
John P. Neissel, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.
Filed June 8, 1972, Ser. No. 261,033
Int. Cl. G01t 3/00
U.S. Cl. 250—252 26 Claims



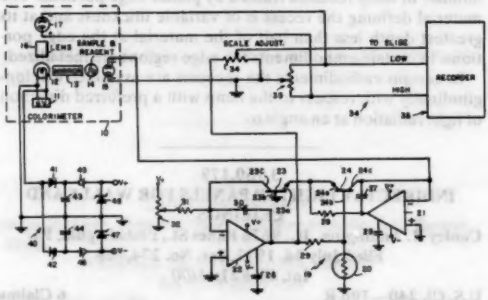
A neutron detector unit and system comprising ion chamber and self-powered portions wherein signals from the ion chamber and self-powered portions are compared and the calibration of the ion chamber portion adjusted accordingly.

3,760,184
PHOTOELECTRIC MONITORING DEVICE FOR PLURALITIES OF THREADS
Peter Brose, Wolfratshausen, Germany, assignor to Firma Erwin Sick, An der Allee, Germany
Filed Mar. 10, 1972, Ser. No. 233,676
Int. Cl. G01n 21/30
U.S. Cl. 250—219 S 15 Claims



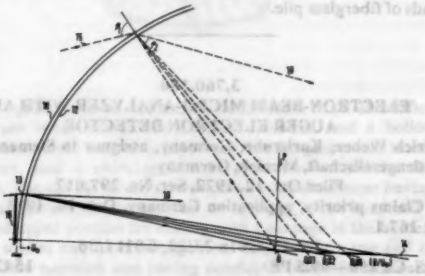
In a photoelectric monitoring device for pluralities of threads, such as in warp knitting machines, a laser beam is split into a number of parallel partial beams by means of beam splitting partially transparent mirrors arranged in the optical path of the laser beam at an angle to the beam axis thereof. Each such partial beam is directed transversely across one group of threads, the threads of said group being parallel and arranged in one plane, and impinges on an associated photoelectric detector. Air flow means either in the form of an air outlet pipe or in the form of a pipe surrounding the light path of each partial beam, having a longitudinal slot and connected to a suction source make sure that broken threads are moved through the respective partial beam to cause a pulse signal from the detector.

3,760,185
SYSTEM FOR LINEARIZING SIGNALS
Aaron F. Green, Cambridge, Mass., assignor to Knobelsdorff Instruments Incorporated, Natsch, Mass.
Filed Aug. 18, 1972, Ser. No. 281,973
Int. Cl. G01j 3/34, 3/50; G06g 7/12
U.S. Cl. 250—226 10 Claims



A system for linearizing a logarithmic signal provided by a colorimeter photocell or the like and for applying the linearized output signal therefrom to a strip recorder or other storage means, the system includes a double diffused transistor which is coupled to a plurality of amplifiers in a manner to utilize the logarithmic relationship between the emitter-base voltage and collector current of said transistor while at the same decreasing linearity error of said photocell.

3,760,186
DEVICE FOR DETERMINING THE ENERGY OF CHARGED PARTICLES
Philippe G. Staib, Mannhardtstrasse 3, Munich, Germany
Filed Jan. 24, 1972, Ser. No. 219,934
Claims priority, application Germany, Jan. 25, 1971, P 21 03 306.7
Int. Cl. H01j 37/26
U.S. Cl. 250—305 7 Claims



A device for determining the energies of charged particles, as Auger electrons, comprises at least one durved or domeshaped electrode biased to converge the paths of parti-

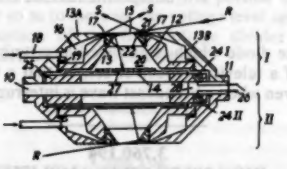
cles which are emitted by a particle source into a solid angle spanned by said electrode. The electrode is convex toward the particle source and cooperates with a similar, fairly closely spaced second electrode, and with a bias source connected to said electrodes to produce a particle accelerating field between them, to focus particles of a predetermined energy into a particle detecting device.

3,760,187

APPARATUS FOR MEASURING RADIATION

Victor V. Volkovisky, Paris, France, assignor to Compteurs-Schlumberger, Montrouge, France

Filed Feb. 11, 1972, Ser. No. 225,516
Claims priority, application France, Feb. 12, 1971, 7104778
Int. Cl. G01t 1/16
U.S. Cl. 250—349 **5 Claims**



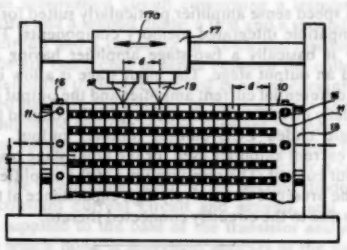
The radiation measuring apparatus comprises two absorbent cavities each having a geometrical form of revolution of general trunconical shape with reflecting lateral walls, the outer base being provided with an axial orifice forming a passage for the radiation to be measured and the inner base comprising the central junctions of a star-shaped thermopile. A window transparent to the radiation is disposed between these two bases, and the two cavities are assembled on their inner base by means of a support.

3,760,188

KNITTING PATTERN AND THE LIKE AND ELECTRO-OPTIC SCANNING MECHANISM THEREFOR

Ernst Dieter Plath, Tailfingen/Wuertt., Germany, assignor to Mayer & Cie Maschinenfabrik, Tailfingen, Germany

Filed Dec. 16, 1971, Ser. No. 208,636
Claims priority, application Germany, Jan. 19, 1970, P 21 02 238.8
Int. Cl. G01n 21/30
U.S. Cl. 250—557 **5 Claims**



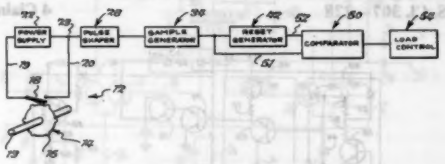
Knitting pattern and the like having pattern fields of different characteristics adapted for being scanned line-by-line and point-by-point, and an electro-optic scanning device for use therewith. The pattern is provided with parallel transverse trace tracks spaced at equal intervals, and with scanning pattern lines alternating with the trace tracks and parallel thereto. Each of the trace tracks consists of longer and shorter fields which alternate with each other and which have different optical characteristics, for example, different light permeability or different degrees of light reflection.

3,760,189

MOTION DETECTING APPARATUS

Clarence O. Jones, Jr., Eggertsville, N.Y., assignor to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,102
Int. Cl. H01h 35/06
U.S. Cl. 307—120 **8 Claims**



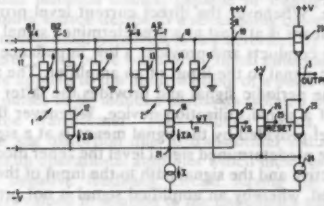
Detecting apparatus for providing a signal when a rotating machine element stops and comprising a pulse generating means mechanically coupled to the machine element for producing electrical pulses at a frequency directly proportional to the speed of rotation of the element. The pulses are applied through a pulse shaper to signal generating means for producing, in response to the occurrence of each pulse, first and second signals which decrease and increase, respectively, in a regular and continuous, preferably linear, manner until the next pulse occurs whereupon the signals are repeated. The signals are applied to a comparison circuit which provides an indicating signal in response to a predetermined relationship between the first and second signals indicating that the machine element has stopped rotating, and the indicating signal is used to control the machine. In preferred form, the element is a cam fixed to the shaft of rotary switching apparatus which is coupled to the drive shaft of a machine such as a power press and which controls the machine.

3,760,190

NON-CURRENT SUMMING MULTIPLE INPUT LATCHING CIRCUIT

Colin William Hannaford, North Poulner, Ringwood, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1972, Ser. No. 267,273
Int. Cl. H03k 17/00
U.S. Cl. 307—218 **6 Claims**



A multiple input latching circuit which responds to the satisfaction of any one or more of a plurality of predetermined input signal conditions by the production of an output signal which persists (until reset) irrespective of any subsequent change in the input signals. The latching circuit comprises a plurality of circuit units, each of which includes a current switch which is placed into a predetermined current conduction condition upon the satisfaction of respective input signal conditions. Said conduction condition allows a predetermined fraction of a specified total current to flow through the circuit unit to an output load and, by feedback action, to trigger into conduction a latching current switch which causes all of the specified current to flow directly to said output load. The voltage drop across the output load provides the output signal from the latching circuit.

3,760,191

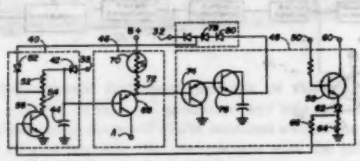
RAMP GENERATOR FOR PRODUCING RAMP CURRENT DURING CONTROLLED RATE DISCHARGE OF STORED CAPACITANCE

James J. Jones, 2604 Natalie, Plano, Collin, Tex.

Division of Ser. No. 837,855, June 30, 1969, abandoned, Continuation of Ser. No. 229,345, Feb. 25, 1972. This application Aug. 24, 1971, Ser. No. 174,537

Int. Cl. H03k 4/08

U.S. Cl. 307—228 4 Claims



A vehicle skid control braking system of the type that includes means for generating a signal varying in accordance with braking conditions, such as vehicle speed, wheel speed and road surface conditions. The system includes a ramp generator responsive to the varying signal means for storing a charge proportional to the varying signal, control means having an output signal varying between first and second values, and discharge means for discharging the storage means at a controlled rate to a level determined by the varying of the control means output signal from the first value to the second value.

3,760,192

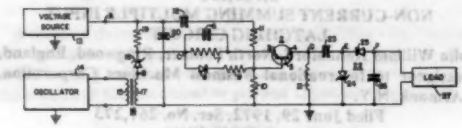
FAIL-SAFE LEVEL DETECTOR

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 18, 1972, Ser. No. 227,585

Int. Cl. H03k 17/74, 5/20

U.S. Cl. 307—235 R 7 Claims



A periodic or carrier signal is provided to the anode electrode of a zener diode through a transformer. A signal means provides a direct current level to the cathode electrode of the zener diode. Whenever the direct current level provided by the signal means is at least at a predetermined signal level the zener diode conducts and provides a low impedance path for the periodic signal to the input of an amplifier. The amplifier amplifies the periodic signal and provides the latter signal to the input of a signal utilization device. Whenever the direct current level provided by the signal means is at a signal level less than the predetermined signal level the zener diode is held non-conductive and the signal path to the input of the amplifier is blocked, whereby an amplified signal is not provided to the input of the signal utilization means.

3,760,193

VOLTAGE MEMORY APPARATUS

Yoichi Sakamoto, Toyonaka City, Japan, assignor to Matsushita Electric Industrial Co., Kadoma City, Osaka Prefecture, Japan

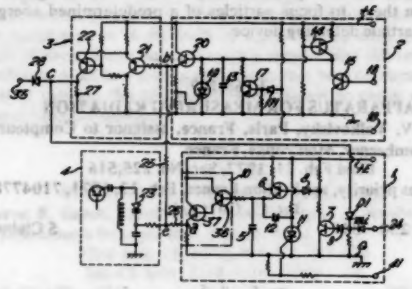
Filed Feb. 22, 1972, Ser. No. 227,753

Claims priority, application Japan, Feb. 19, 1971, 46/8275; Feb. 19, 1971, 46/8276; Feb. 19, 1971, 46/8277; Feb. 19, 1971, 46/8278; Feb. 19, 1971, 46/8279

Int. Cl. H04b 1/34; H03j 3/18

U.S. Cl. 307—233 14 Claims

A voltage-memory apparatus comprises a main voltage-sweep circuit capable of holding a voltage without prominent loss of voltage and an auxiliary voltage-sweep circuit capable of boosting the held voltage. The memory apparatus is capable of memorizing a specified voltage applied to a variable capacitance diode which is provided as a tuning capacitance in tuner of a television receiver set, so that a tuned status is retained even when a broadcast wave is interrupted for a short time.



3,760,194

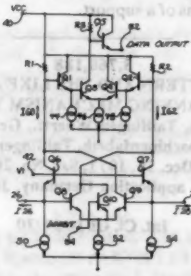
HIGH SPEED SENSE AMPLIFIER

Robert Clare Lutz, Sunnyvale, and Jerald R. Bernacchi, Los Altos, both of Calif., assignors to Advanced Mamory Systems, Sunnyvale, Calif.

Filed Jan. 31, 1972, Ser. No. 222,148

Int. Cl. H03k 5/20, 19/38; H03l 3/30

U.S. Cl. 307—235 R 10 Claims



A high speed sense amplifier particularly suited for use with ECL compatible integrated memory components. The sense amplifier is basically a two-stage amplifier having an input stage and an output stage. The input stage is a low input impedance differential current amplifier and the output stage is a differentially driven current switch typically coupled to a standard single ended ECL emitter follower output. The differential current amplifier used for the input stage responds to a low input current. The response time of the amplifier is short even in the presence of relatively high capacitance at the input terminals due to the circuitry connected thereto.

3,760,195

TRIGGER COMPARATOR CIRCUIT

Bronislaw Tadeusz Szpakowski, Kanta, Ontario KOA 2CO, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

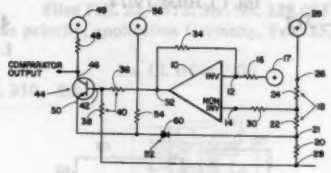
Filed Aug. 28, 1972, Ser. No. 284,148

Int. Cl. H03k 5/20

U.S. Cl. 307—235 13 Claims

A trigger comparator circuit having an operational amplifier which compares a reference voltage with a sample of a source voltage developed across a second portion of a first

voltage divider. When the source voltage increases beyond a predetermined level a corresponding signal is generated at the output terminal of the operational amplifier which begins to drive a transistor switch into conduction. The transistor switch



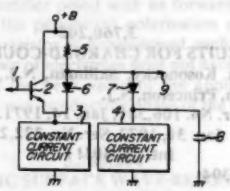
in turn channels current through a first portion of the first voltage divider so as to increase the voltage level appearing at the second portion of the first voltage divider until the transistor switch is driven into saturation.

3,760,196

NOISE SUPPRESSION CIRCUIT

Yoshisa Nomoto; Masanori Oguino, both of Totsuka-ku, Yokohama; Selichi Ueda, Kodaira, and Sadao Kitamura, Kamakura, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Apr. 25, 1972, Ser. No. 247,347
Claims priority, application Japan, Apr. 30, 1971, 46/27963
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **8 Claims**



A noise suppression circuit comprising a transistor, a resistor, a first and a second diode, a first and a second constant current circuit and a capacitor in which the resistor and the first diode are connected in series between the collector and the emitter of the transistor, the first constant current circuit is connected between the emitter of the transistor and ground, the second diode and the second constant current circuit are connected in series between the connecting point of the resistor and the first diode and ground, a capacitor is connected between the connecting point of the second diode and the second constant current circuit and ground, and, an input signal is supplied to the base of the transistor and an output signal in which noise is supressed appears at the connecting point of the resistor and the first diode.

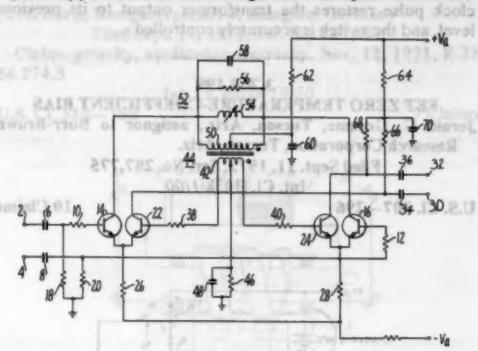
3,760,197

SELF-OSCILLATING LIMITER

Bert H. Dann, Mountain View, Calif., assignor to International Video Corporation, Sunnyvale, Calif.

Filed Jan. 19, 1972, Ser. No. 218,862
Int. Cl. H03k *5/08*; H03b *3/02*
U.S. Cl. 307—237 **6 Claims**

A first pair of NPN transistors operate to amplify and limit an input signal. A second pair of NPN transistors, gated on by the first pair, function to provide the circuit output when an input is applied, and function together in conjunction with an



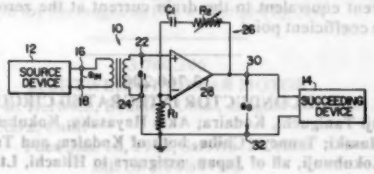
RLC tank to oscillcate a predetermined frequency when no input is applied.

3,760,198

CIRCUITRY FOR TRANSMITTING PULSES WITH GROUND ISOLATION BUT WITHOUT PULSE WAVEFORM DISTORTION

Hiroshi Mori; Yutaka Wakasa, and Hisayuki Uchike, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Oct. 21, 1971, Ser. No. 191,176
Claims priority, application Japan, Nov. 6, 1970, 45/97616
Int. Cl. H03k *5/01*, *6/04*
U.S. Cl. 307—268 **19 Claims**



A ground isolation circuit, capable of transferring signal pulses from a source device to a succeeding device operating at a different ground potential, is characterized by a distortion free transfer of the pulse waveform. Signal pulses at the source device are applied to the input winding of a pulse transformer to cause pulses to be induced across an isolated output winding of the transformer. The induced pulses, containing waveform sag distortion due to transformer inductance, are applied to an operational amplifier which includes a resistive-capative negative feedback circuit having its impedance parameters valued in relation to the impedance parameters of the pulse transformer to compensate by means of feedback for the pulse waveform sag introduced by the pulse transformer.

The output of the operational amplifier is applied directly to the succeeding device or to a second isolation circuit adapted to eliminate distortion in pulses having a relatively long duration. In the second isolation circuit a pair of coincidence gates are each gated both by the output waveform of the operational amplifier and by an oscillator supplying opposite polarity clock pulses to the two gates, and thus the gate outputs are clock pulse trains of opposite polarity, occurring contemporaneously with the signal pulse. A second pulse transformer has its input winding connected to the gate outputs, to cause an alternating polarity waveform to be induced across an isolated output winding. This alternating waveform is rectified and applied to a switch to cause it to be "on" during the signal pulse. By selecting the clock pulse period to be short in rela-

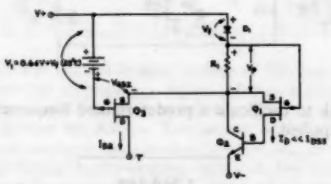
tions to the signal pulse period, insignificant pulse waveform sag is introduced by the second pulse transformer, since each clock pulse restores the transformer output to its previous level, and the switch is accurately controlled.

3,760,199

FET ZERO TEMPERATURE-COEFFICIENT BIAS

Jerald G. Graeme, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Sept. 11, 1972, Ser. No. 287,775
Int. Cl. H03k 1/00
U.S. Cl. 307—296 10 Claims



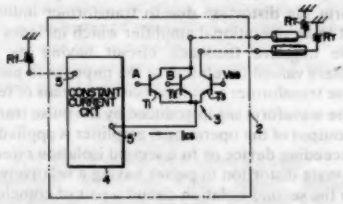
Compensatory circuitry is disclosed for developing biasing voltage sources, which sources are adjusted to conform with temperature sensitive variations and manufacturing variations of junction field effect transistors, and thereby consistently produce a zero temperature coefficient bias. The pinchoff voltage of junction field effect transistors varies with temperature and must be compensated by an equal and opposite compensating voltage. The pinchoff and compensatory voltages are developed and the combination of the two will provide a zero temperature coefficient bias voltage by providing a stable bias to the junction field effect transistor resulting in a drain current equivalent to the drain current at the zero temperature coefficient point.

3,760,200

SEMICONDUCTOR INTEGRATED CIRCUIT

Kenji Taniguchi, Kodaira; Akio Hayasaka, Kokubunji; Akira Masaki; Tsuneyo Chiba, both of Kodaira, and Tadao Kaji, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1972, Ser. No. 229,147
Claims priority, application Japan, Feb. 24, 1971, 46/8645
Int. Cl. H03k 19/08
U.S. Cl. 307—303 7 Claims



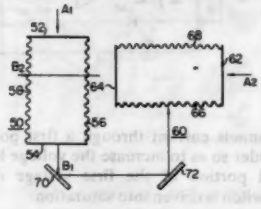
A semiconductor integrated circuit is formed on a semiconductor substrate and includes a current mode type logic circuit and a constant current circuit to supply a constant current to the logic circuit. A reference resistor for adjusting the constant current is provided separately from the semiconductor substrate and connected to the constant current circuit. With this construction, fluctuations of the amplitude of the logic circuit output signal may be reduced.

3,760,201

OPTICAL FLIP-FLOP ELEMENT

Jun-ichi Nishizawa, and Kaoru Takahashi, both of Sendai, Japan, assignors to Semiconductor Research Foundation, Kawauchi, Sendai, Japan

Filed Sept. 16, 1971, Ser. No. 181,078
Int. Cl. H03k 19/14
U.S. Cl. 307—312 4 Claims



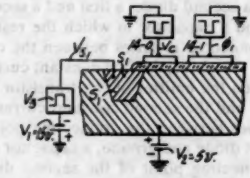
A semiconductor laser diode has two opposite parallel mirror end faces normal to its PN junction. With a forward current flowing through the PN junction, the application of an optical pulse to one of the mirror faces causes a sustained coherent light to be emitted through the other mirror face. When a coherent light from a similar diode falls upon the first diode, the latter terminates its emission. The pulse is again applied to the first diode to emit the coherent light from it. Thus both diodes form a FLIP-FLOP. Those two diodes may be formed in a single semiconductor wafer.

3,760,202

INPUT CIRCUITS FOR CHARGED-COUPLED CIRCUITS

Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation, Princeton, N.J.

Division of Ser. No. 106,381, Jan. 14, 1971. This application Jan. 31, 1972, Ser. No. 222,237
Int. Cl. H01l 11/14
U.S. Cl. 307—304 8 Claims



An input circuit for a charge-coupled circuit includes a source electrode in the substrate and a gate electrode spaced from the substrate located between the source electrode and a storage electrode. The amount of surface charge signal which becomes stored beneath the storage electrode may be controlled by controlling the source electrode voltage while the gate electrode is at a sufficiently high voltage level to form a low impedance conduction channel in the substrate. The time at which this charge signal transfers to the surface of the substrate beneath the storage electrode may be controlled by controlling the timing of the application of the voltage to the control electrode.

3,760,203

DEPOLARIZATION PROTECTION FOR CERAMIC PIEZOELECTRIC MOTOR

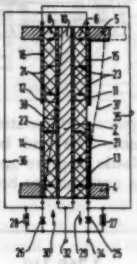
Max Guntersdorfer, and Peter Kleinschmidt, both of Munich, Germany, assignor to Siemens Aktiengesellschaft and Braun AG, both of Frankfurt, Germany, by said Guntersdorfer

Filed Feb. 22, 1972, Ser. No. 228,085

Claims priority, application Germany, Feb. 25, 1971, P 21 09 063.1

Int. Cl. H01v 7/00

U.S. Cl. 310—8.1 7 Claims



A piezoelectric motor employs a bending strip or several bending strips having piezoelectric ceramic elements which are mechanically connected in parallel in a single or several packages wherein each bending strip undergoes bending or torsional deformation upon the application of an alternating electrical voltage applied to one or several electrode pairs carried by the ceramic bending strip. The direction of the voltage reverses from between the same direction and the direction opposite to that of the permanent polarization of the ceramic material between the pair of electrodes and the motor includes a circuit comprising parallel connected rectifier and resistor elements connected in series with pairs of electrodes and having the rectifier poled with its forward direction opposite to that of the permanent polarization of the ceramic material and the resistor is dimensioned such that the peak voltage across a pair of electrodes does not exceed a predetermined fraction of the peak value of the applied alternating voltage during the non-conducting phase of the rectifier.

3,760,204

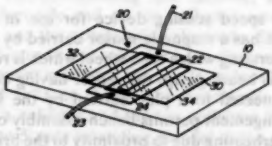
ACOUSTIC SURFACE WAVE RESONATOR

Francis R. Yester, Jr., Northlake, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 1, 1972, Ser. No. 230,813

Int. Cl. H01v 7/00

U.S. Cl. 310—8.2 15 Claims



A piezoelectric resonator including body of piezoelectric material capable of propagating acoustic surface waves in response to electrical signals applied thereto. The surface waves are confined to a predetermined area on the surface of the piezoelectric material by bonding to the piezoelectric material a layer of acoustically transmissive material having an acoustic transmission velocity lower than the acoustic transmission velocity of the piezoelectric material. The dimension of the resultant laminate along the direction of propagation of the acoustic surface waves determines the resonant frequency of the laminate. The electrical characteristics of the resonant laminate are similar to those of quartz crystals commonly used in oscillators and filters.

3,760,205

VARIABLE-RELUCTANCE ELECTRICAL GENERATOR

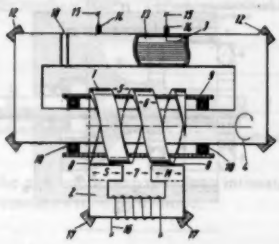
Pavel Imris, Konigsbergerstr. 4, Eldagsen, Germany

Filed Sept. 11, 1972, Ser. No. 287,821

Claims priority, application Germany, Nov. 12, 1971, P 21 56 274.3

Int. Cl. H02k 19/20

U.S. Cl. 310—168 7 Claims



An electrical generator particularly designed to generate high voltages is disclosed. The generator includes an induction coil and a driven rotor associated with the coil and a curvilinear, spirally or helically-shaped band made of ferromagnetic material provided on the surface of the rotor. A magnet is provided which produces a magnetic field. The terminal sections of the ferromagnetic band which envelop a section of the induction coil are positioned opposite to the North and South poles of the magnet and the ferromagnetic band is so proportioned and affixed that the maximum effective band length for transmitting continuous magnetic flux to the induction coil, measured in degrees of angle, is 720°, and the minimum effective band length is 360°. The width of the poles and the gap between the poles are of such a dimension that when the ferromagnetic band turns through half a revolution the effective band length for the magnetic flux is changed by 360°.

3,760,206

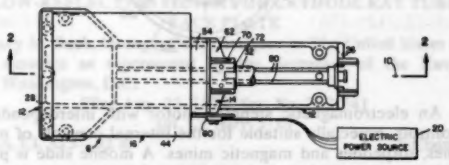
LIGHTWEIGHT LINEAR MOTOR

Friedrich R. Hertrich, Boulder, Colo., assignor to Iomec, Inc., Santa Clara, Calif.

Filed Jan. 12, 1972, Ser. No. 217,119

Int. Cl. H02k 41/02

U.S. Cl. 310—13 19 Claims



A linear motor for the positioning of objects such as magnetic pickup heads and the like comprising a support structure that mounts a guide rod, an annular permanent magnet, and a concentric pole piece that is spaced from the magnet. A voice coil assembly slidably engages the rod and a cylindrical surface of the pole piece and slides linearly along the rod and the surface into and out of an annular space between the magnets. An electric conductor is wound about a lightweight sleeve of the coil assembly and connected with an electric power source for generating electromagnetic forces and linearly moving the motor. The coil assembly includes means for mounting the pickup head or the like and an arm that extends radially away from the assembly into engagement with a guide track on the support structure to prevent rotary motions of the coil assembly on the rod or the cylindrical surface.

3,760,207

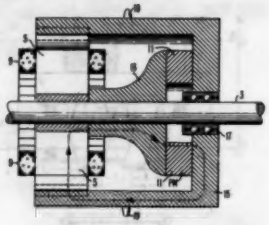
STEPPING MOTOR STRUCTURE

Dennis G. Abraham, Vestal; George J. Dohanich, Endicott; Frederick W. Doolittle, Binghamton, and Stephen H. Mills, Newark Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1972, Ser. No. 253,064

Int. Cl. H02k *37/00*

U.S. Cl. 310—49 **7 Claims**



A dynamoelectric machine having a stator enclosed in a rotor, the stator including spider-like projections each having teeth which coact with teeth on the interior of the rotor. The operating windings are located on the legs of the stator spider. A cylindrical permanent magnet provides an operating magnetic bias, and a flux guiding element steers the flux appropriately. A single-ended and a balanced embodiment are disclosed.

3,760,208

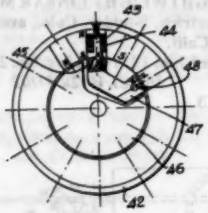
ELECTROMAGNETIC STEPPING MOTOR

Emile Francois Joseph Hamon, La Seyne Sur Mer, France, assignor to Etat Francais represente par Le Ministre d'Etat charge de La Defense Nationale-Delegation Ministerielle pour L'Armement, Paris, France

Filed July 31, 1972, Ser. No. 276,723

Int. Cl. H02k *37/00*

U.S. Cl. 310—49 **17 Claims**



An electromagnetic stepping motor with interdependent controls, especially suitable for the internal controls of missiles, torpedoes and magnetic mines. A mobile slide is provided in a molded structure carrying firstly two permanent magnets enabling motor action on excitation of magnetic frames by control windings, and secondly two permanent magnets securing mechanical locking in each position. This device can be used in programming systems, arming jacks for propellants or military charges, valves or gate controls.

3,760,209

SPLIT END BELL FOR MOTOR HOUSING

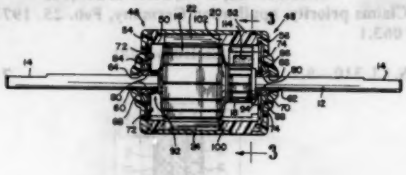
David R. Hult, Columbus, Ind., assignor to Vernco Corporation, Columbus, Ind.

Filed May 25, 1972, Ser. No. 256,905

Int. Cl. H02k *5/00*

U.S. Cl. 310—91 **17 Claims**

A motor comprising a rotor assembly including an elongated shaft and an armature assembly mounted on the shaft intermediate its ends, stator elements disposed about the armature assembly, and a housing including an axially extending cylindrical shell enclosing the stator elements and end bells for closing each end of the shell and journal mounting the shaft. Each end bell is a 2-piece end bell including a peripherally extending axially inner piece and a mating peripherally extending axially outer piece. The end bell pieces, which are preferably made of plastic, capture and support the bearings for the shaft, hold the commutator brushes and position the stator elements.



3,760,210

MOUNTING ARRANGEMENT FOR AN ANGULAR SPEED OR POSITION SENSING DEVICE FOR A VEHICLE WHEEL

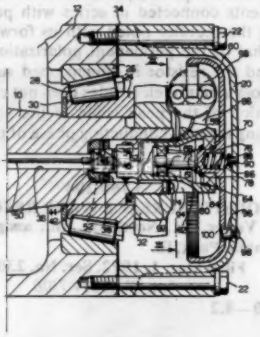
Galileo Abate, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Sept. 20, 1971, Ser. No. 181,901

Claims priority, application Italy, Oct. 16, 1970, 70447 A/70

Int. Cl. H02k *19/20*

U.S. Cl. 310—168 **2 Claims**



An angular speed sensing device for use in an anti-skid braking system has a magnetic sensor carried by a single support and cooperating with a tone wheel which is rotatably coupled to a wheel bearing cap, the sensor having electrical output leads connected to a plug carried by the support. The mounting arrangement permits bench-assembly of the device, and avoids overheating due to proximity to the brakes.

3,760,211

WIRING CONNECTION TO A BRUSH ASSEMBLY IN A DYNAMO ELECTRIC MACHINE

Herbert John Thomas Cotton, Hollywood, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 1, 1972, Ser. No. 230,623

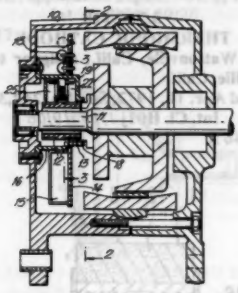
Claims priority, application Great Britain, Mar. 2, 1971, 5,860/71

Int. Cl. H02k *13/00*

U.S. Cl. 310—242 **3 Claims**

A dynamo electric machine comprises a stator, a rotor, a pair of slip rings mounted on the shaft of the rotor, and a pair

of brushes. The brushes are mounted in a housing which is bolted to a printed circuit board surrounding the rotor shaft by bolts passing through bosses in the housing. Torsion springs are mounted on the bosses and urge the brushes against the



slip rings. The bolts are electrically connected to appropriate parts of the printed circuit board and leads extend from the brushes to the bolts so that the brushes are electrically connected to the printed circuit by way of the bolts.

3,760,212

IONIZATION PRESSURE GAUGE TUBE

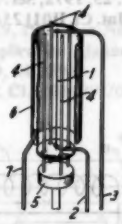
Hermann Mennenga, Balzers, Germany, assignor to Balzers Patent-Und Beteiligungs-Aktiengesellschaft, Balzers, Liechtenstein

Continuation of Ser. No. 866,504, Oct. 15, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,633

Claims priority, application Switzerland, Oct. 15, 1968, 15503/68

Int. Cl. G01t *1/18*; G01n *27/00*

U.S. Cl. 313—7 **4 Claims**



An ionization pressure gauge tube is designed as a triode including an electron-emitting hot cathode, an electron-accelerating electrode and an ion collector arranged between the cathode and the accelerating electrode. The cathode, accelerating electrode and collector have dimensions and a relative arrangement such that the triode system has a transconductance of 0.25 to 1.00. The accelerating electrode is designed as a cylinder and the ion collector is designed as a system of 3 to 5 rods extending parallel to the axis of the tube and arranged symmetrically around the cathode. The cylindrical accelerating electrode has a diameter of from 8 to 16 mm.

3,760,213

ANODE FOR A DISCHARGE TUBE

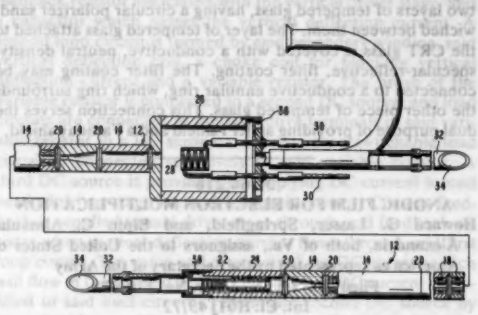
Robert J. Buzzard, Palo Alto, Calif., assignor to Coherent Radiation, Palo Alto, Calif.

Filed Apr. 29, 1971, Ser. No. 138,815

Int. Cl. H01j *7/24*, *61/52*; H01k *1/58*

U.S. Cl. 313—39 **11 Claims**

An improved anode for a discharge tube is provided in which an anode member is positioned within an anode receiving envelope and wherein the anode is constructed of a thermal-expanding material such that during operation of the



discharge tube the anode expands into intimate mechanical and thermal contact with the envelope.

3,760,214

SHADOW MASKS FOR USE IN COLOUR PICTURE TUBES

Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Jan. 3, 1972, Ser. No. 214,551

Int. Cl. H01j *29/46*

U.S. Cl. 313—85 S **4 Claims**

In a shadow mask for use in a colour picture tube of the type including a plurality of perforations for passing an electron beam there are provided on the opposite sides of the shadow mask layers of a substance capable of suppressing the emission of secondary electrons caused by the collision of the electron beam.

3,760,215

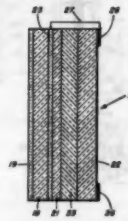
LOW-REFLECTION FILTER FOR CATHODE RAY TUBE FACE PLATE

Gary M. Sach, Orange, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 22, 1972, Ser. No. 282,741

Int. Cl. H01j *5/16*

U.S. Cl. 313—92 R **9 Claims**



The invention consists of a filter for the display screen of a cathode-ray tube (CRT). The filter permits a high contrast

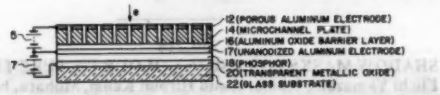
ratio to be obtained for operation of a CRT in intense ambient light and comprises a faceplate sandwich bonded to the viewing side of the phosphor coated CRT glass. The filter includes two layers of tempered glass, having a circular polarizer sandwiched between them. The layer of tempered glass attached to the CRT glass is covered with a conductive, neutral density, specular-reflective, filter coating. The filter coating may be connected to a conductive annular ring, which ring surrounds the other piece of tempered glass. This connection serves the dual purpose of providing an RFI shield and a Faraday shield.

3,760,216

ANODIC FILM FOR ELECTRON MULTIPLICATION

Howard G. Lasser, Springfield, and Bipin C. Almaula, Alexandria, both of Va., assignors to the United States of America as represented by the Secretary of the Army

Filed Jan. 25, 1972, Ser. No. 220,673
Int. Cl. H01j 43/12
U.S. Cl. 313—94 **17 Claims**



A plurality of electron multipliers which are basically similar in construction but have different specific characteristics. These characteristics include a solid or porous electron producer and/or preamplifier on one side of a microchannel plate with a separately prepared glass substrate having a transparent metallic oxide layer, a phosphor layer, and a transparent cathode, singly or in combination on one side of the glass substrate. The microchannel plate and glass substrate are held together mechanically with the electron producer or preamplifier and the glass substrate on the outermost sides.

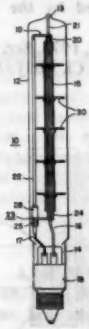
The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment to us of any royalties thereon.

3,760,217

SINGLE-ENDED HALOGEN-CYCLE INCANDESCENT LAMP WITH BRIDGELESS MOUNT ASSEMBLY

Jack Martin, Paramus, and Joseph S. Gorecki, West Caldwell, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1972, Ser. No. 283,682
Int. Cl. H01k 1/14, 1/18
U.S. Cl. 313—276 **10 Claims**



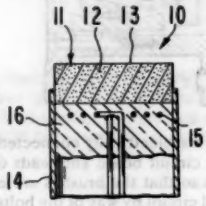
The coiled filament of a tubular halogen-cycle type lamp is suspended within the envelope by a mount assembly which is so constructed that the lead wires are rigidly coupled to and electrically insulated from each other without the quartz bridge member customarily employed. Discoloration of the envelope in the region of the bridge member is inhibited and the lumen maintenance of the lamp is thus enhanced.

3,760,218

THERMIONIC CATHODE

Leo J. Cronin, Watsonville, Calif., assignor to Spectra-Mat, Inc., Watsonville, Calif.

Filed Apr. 10, 1972, Ser. No. 242,345
Int. Cl. H01j 1/14, 19/06
U.S. Cl. 313—346 R **9 Claims**



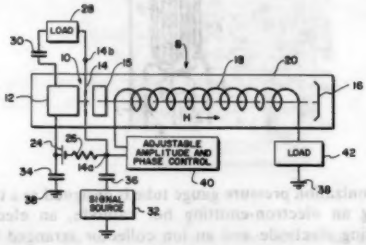
A cathode is disclosed utilizing an emission material of barium oxide, calcium oxide and an oxide selected from the group consisting of cobalt oxide, manganese oxide and molybdenum oxide.

3,760,219

TRAVELING WAVE DEVICE PROVIDING PREBUNCHED TRANSVERSE-WAVE BEAM

Charles M. DeSantis, Neptune, and Arthur H. Gottfried, Rumson, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,456
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 **7 Claims**



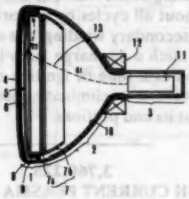
A traveling wave tube having a control grid that backs and fills across the entire cathode emitting surface to form a delay line with the cathode. This delay line causes the electron beam to take on the helical pattern of a transverse wave. The traveling wave tube has a slow wave circuit which interacts with the transverse beam wave. Circuit means is provided for coupling signal energy to both the control grid and to the slow wave interaction circuit in a predetermined amplitude and phase relationship. The control grid is operated with DC cutoff bias. Each peak of the signal propagated by the grid-cathode delay line annuls the cutoff bias locally and forms a moving window, analogous to a moving window of a focal plane shutter, emitting an electron beam only from a local area of the cathode, which local area cyclically traverses the cathode at the signal frequency whereby the emitted beam is properly prebunched in a helical configuration for efficient transverse wave interaction.

3,760,220

POST FOCUSING TYPE COLOUR PICTURE TUBES

Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 7, 1972, Ser. No. 304,509
Claims priority, application Japan, Nov. 8, 1971, 46/088218
Int. Cl. H01j 29/70
U.S. Cl. 315—17 6 Claims



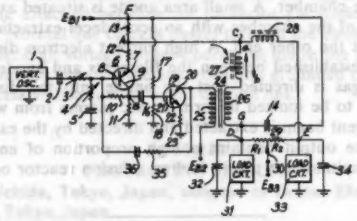
In a post focussing type colour picture tube comprising an evacuated envelope including a panel, a funnel and a neck, a fluorescent screen formed on the inner surface of the panel, an electron gun assembly contained in the neck, a colour selection electrode disposed between the electron gun assembly and the fluorescent screen, and a supporting member for supporting the colour selection electrode, the colour selection electrode is electrically insulated from the supporting member and a potential higher than that impressed upon the colour selection electrode is impressed upon the supporting member.

3,760,221

DEFLECTION AND PICTURE POSITION ADJUSTING APPARATUS

Sadayoshi Yoshikawa, and Mitsuo Arita, both of Osaka, Japan, assignors to New Nippon Electric Company Ltd., Osaka, Japan

Filed Oct. 19, 1970, Ser. No. 81,870
Claims priority, application Japan, Nov. 29, 1969, 44/95940; Nov. 29, 1969, 44/95941
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 20 Claims



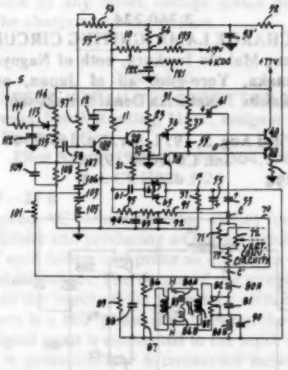
Vertical deflection and picture position adjusting circuits are provided for color television receivers. These circuits include a vertical output transformer having a primary winding to which is supplied a sawtooth wave from a vertical output element, and a secondary winding for supplying vertical deflection current to a vertical deflection coil. Feedback is provided from a circuit including the deflection coil and secondary winding to the vertical driver stage connected thereto for the purpose of compensating linearity. A vertical deflection and picture position adjustment arrangement provides that the primary winding and secondary winding are isolated from each other in a DC sense. Also current is supplied to the vertical output element from a first DC source. In a first type of circuit of the invention, a first loop circuit is formed by said secondary winding, the vertical deflection coil, a feedback resistor associated with the vertical deflection coil, a feedback resistor associated with the vertical driver stage, and a capacitor which passes the vertical deflection current. A second loop circuit is formed by said secondary winding, said vertical deflection coil, a choke coil for blocking vertical deflection current and a variable resistor. The brush of the variable resistor is connected to a second DC source, and load circuits are connected to the respective terminals of said variable resistor in a DC sense or alternatively a switchable load circuit is connected selectively to said variable resistor. A third DC source is provided for supplying DC current to said vertical driver stage via said feedback resistor. Current feedback is supplied to said driver stage through said feedback resistor when vertical deflection current flows through said first loop circuit. The value and direction of the DC current which will flow in the vertical deflection coil when DC current is supplied to said load circuit(s) from said second DC source by way of said second loop circuit are determined by said variable resistor whereby the picture position is adjusted. In a second type of circuit of the invention, a series circuit is formed by said secondary winding and vertical deflection coil and an AC loop circuit is formed by said series circuit and a feedback resistor associated with the vertical driver stage and a capacitor. One terminal of said series circuit is connected to a second DC source via a DC current shunting circuit. The secondary winding is connected via a DC current shunt-ing, variable resistor to a third DC source whose potential is higher than that of said second DC source. DC current is supplied to said vertical driver stage from said second DC source through said feedback resistor. Current feedback is effected to said driver stage by using said feedback resistor when vertical deflection current flows through said AC loop circuit. The value and direction of the DC current flowing in the vertical deflection coil are determined by said variable resistor. Unidirectional conductive elements are connected between said second and third DC sources and form a stabilizing circuit for keeping the voltage ratio between the two DC sources constant.

3,760,222

PINCUSHION CORRECTED VERTICAL DEFLECTION CIRCUIT

Lawrence Edward Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 37,668, May 15, 1970, Pat. No. 3,684,970.
This application Feb. 7, 1972, Ser. No. 224,191
Int. Cl. H01j 29/70
U.S. Cl. 315—27 GD 4 Claims



Transistorized vertical deflection circuit employs output stage of class B, push-pull, complementary symmetry configuration with vertical yoke winding halves serially connected in output circuit. Miller integrator approach is used for sawtooth

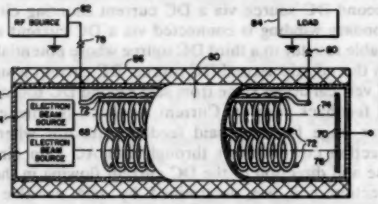
wave generation, with feedback waveform derived from yoke current sampling resistor. Discharge transistor is responsive to feedback of flyback pulses developed across serially connected yoke winding halves. Apparatus disposed between winding halves introduces modulated horizontal deflection frequency current components in winding halves for pincushion correcting purposes. One winding half of vertical deflection yoke is shunted by a capacitor of a value selected to introduce cancellation of horizontal deflection frequency components across yoke/pincushion circuitry, in order to minimize feedback of interlace-disturbing horizontal components in pincushion corrected vertical deflection circuit.

3,760,223

SINGLE CONDUCTOR MULTI-COIL MULTI-BEAM MICROWAVE DEVICE

Louis J. Jasper, Jr., Neptune City, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 10, 1972, Ser. No. 279,592
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.6 **1 Claim**



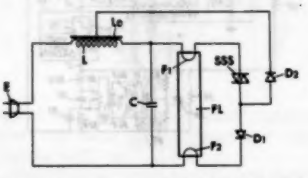
A traveling wave tube is provided with a low-wave, electron beam interaction means in the form of a single wire conductor coiled into at least two parallel series of aligned turns; in each series, the turns are of identical size and configuration. In one form, all the turns have rectilinear stretches of equal length that are in a common plane; an electron beam source, a collector, a sole electrode and electric and magnetic fields direct a sheet beam alongside the rectilinear stretches outside the turns. In another form, the turns of the single wire conductor are almost entirely circular and in figure-eight configuration viewed endwise; electron beams are directed through either one or both series of turns. In still other forms of the invention, the slow-wave means viewed endwise has more than two turns and the axes are coplanar or in a circular distribution.

3,760,224

DISCHARGE LAMP IGNITING CIRCUIT

Tetsuji Shimizu; Makoto Iwakura, both of Nagoya City, and Hiroshi Tanaka, Yoro-gun, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Pref., Japan

Filed Aug. 5, 1971, Ser. No. 169,234
Int. Cl. H05b *39/00*
U.S. Cl. 315—94 **8 Claims**



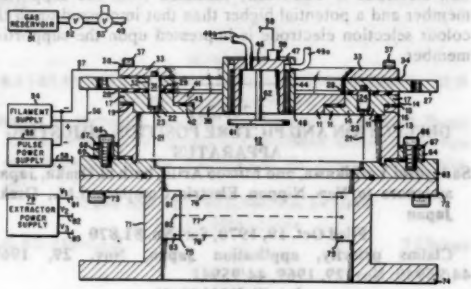
A discharge lamp igniting circuit in a discharge lamp of short tube length and capable of being ignited only by preheating a filament thereof, comprising a stabilizer winding having a secondary winding; a switching element connected to the discharge lamp at a terminal of one filament of said discharge lamp which is not connected to a power supply; and a diode connected to said secondary winding to keep said switching element conductive for at least one cycle until the discharge lamp is started; said secondary winding of the stabilizer winding, said filament of the discharge lamp, said switching element and said diode forming a closed loop to promote pre-heating of the filament and energize the stabilizer winding throughout all cycles by a short-circuit current flowing through the secondary winding, the switching element and the diode. With such a discharge lamp igniting circuit, a kick voltage produced at a time of ignition of the discharge lamp can be well prevented to eliminate possible darkening of the discharge lamp at its end portions.

3,760,225

HIGH CURRENT PLASMA SOURCE

Kenneth W. Ehlers, Alamo; Wulf B. Kunkel, Berkeley, and William R. Baker, Orinda, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 6, 1972, Ser. No. 260,236
Int. Cl. H01j *7/24*; H05h *1/00*
U.S. Cl. 315—111 **8 Claims**



A plasma source in which a plurality of sturdy filaments are distributed around the perimeter of a truncated cylindrical discharge chamber. A small area anode is situated axially at one end of the chamber with an accel-decel extraction grid system at the other end. A high current electron discharge pulse is established between the filaments and anode and a puff of gas is directed past the anode into the discharge chamber to be ionized to form an arc plasma from which a high current beam is extracted and directed by the extractor grids. The output contains a high proportion of energetic neutrals suitable for use in fueling a fusion reactor or other purpose.

3,760,226

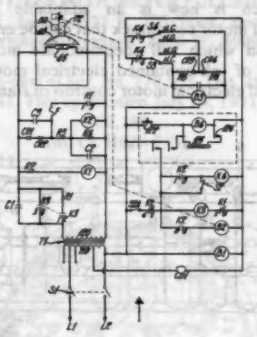
ELECTRIC SYSTEM

Edward J. Kiefer, and Dale W. Rogers, both of Toledo, Ohio, assignors to Holophane Company Incorporated, New York, N.Y.

Filed July 26, 1971, Ser. No. 166,034
Int. Cl. H05b *39/04*
U.S. Cl. 315—227 **7 Claims**

The disclosure embraces an electric system including a gas discharge arc lamp construction of a character particularly for use in the graphic arts field and a transformer power circuit for a gas discharge arc lamp wherein an increased voltage for momentarily effecting gas ionization and establishment of the arc is attained through the summation of a peak charge of applied alternating current voltage of a capacitor occurring dur-

ing one-half cycle applied directly to the lamp in series with the applied voltage from the transformer during the alternate



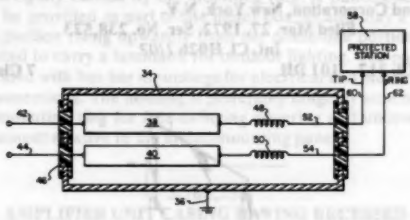
half cycle and thereafter shorting out the capacitor for applying the normal voltage of the transformer to the arc lamp for normal operation.

3,760,227

GAS TUBE PROTECTOR HAVING AN INTERNAL FUSE LINK

Carleton H. Poindexter, Bensenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 29, 1972, Ser. No. 319,579
Int. Cl. H02h *1/04*
U.S. Cl. 317—16 **6 Claims**



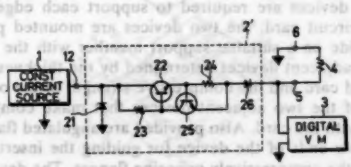
A series connected gas tube protector having an internal fuse link attached between the protector electrode and the output. Normal line current passes through the electrode and fuse link, high voltage surges operate to ionize the protector gases and arc between the electrode and grounded tube case, and excessive line current opens the fuse link.

3,760,228

PROTECTING CIRCUIT

Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Co. Ltd., Tokyo, Japan

Filed Oct. 5, 1972, Ser. No. 295,260
Int. Cl. H02h *3/20*
U.S. Cl. 317—31 **9 Claims**



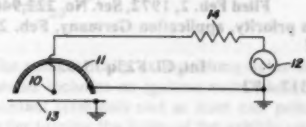
A protecting circuit of this invention comprises a transistor circuit proof against higher voltage, connected in series between one circuit having the possibility that the overvoltage is supplied to it, and another circuit to be protected against the overvoltage, a resistance circuit supplying a base current to a transistor of the said transistor circuit, a detecting resistance connected in series with the said transistor circuit proof against higher voltage, a control circuit connected in series with the said resistance circuit supplying the base current and connected to control the said transistor circuit proof against higher voltage by the ON-OFF operation depending on the growth of the voltage drop across the said detecting resistance, a diode circuit proof against higher voltage, connected in series with the said transistor circuit proof against higher voltage to prevent a higher reverse voltage from being applied to the said transistor circuit proof against higher voltage, and a diode connected essentially in parallel with the said circuit to be protected against the overvoltage and connected so as to keep a conductive state when the overvoltage is supplied to the said circuit having the possibility that the overvoltage is supplied to it. It has normally little influence on the supply of a current, and functions to protect a circuit when the overvoltage is applied.

3,760,229

AC COROTRON

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,125
Int. Cl. H05f *3/00*; H01t *19/04*
U.S. Cl. 317—2 F **4 Claims**



An improved a.c. corotron for neutralizing the charge on a charge receiving surface is provided according to the teachings of the present invention. The a.c. corotron, which includes an electrode and a shield partially surrounding the electrode is adapted to be driven by an a.c. source connectable between the electrode and the shield. According to one embodiment of the invention an impedance is connected intermediate the electrode and the a.c. source to tend to equalize the magnitude of the a.c. potential applied to the electrode during the intervals in the operation of the a.c. corotron in which positive and negative ion current flows. This reduces the magnitude of any offset voltage which may ultimately remain on the charge receiving surface.

3,760,230

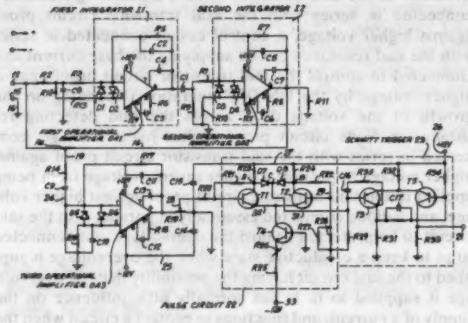
HIGH SPEED AC FAILURE DETECTOR CIRCUIT

Ross Henderson, North Reading, Mass., assignor to Gould Inc., Mendota Heights, Minn.

Filed Nov. 9, 1972, Ser. No. 304,996
Int. Cl. H02h *3/26*
U.S. Cl. 317—27 R **7 Claims**

A high speed AC failure detector circuit for detecting an AC power failure and producing an output signal upon the occurrence of such failure comprises an integrator circuit having an input and an output. The output of the integrator circuit is connected to the input of the integrator circuit in a manner whereby there is a 180° phase shift between the input and the output. A signal input is connected to the input of the integrator circuit. A potentiometer is connected between the input and the output of the integrator circuit. When a continuous AC signal is supplied to the signal input the resultant signal at the potentiometer is zero due to the 180° phase shift between the input and the output of second integrator circuit. When a discontinuity appears in an AC signal supplied to the signal

input the resultant signal at the potentiometer is a sine wave. An output connected to the potentiometer fails to produce an



output signal when the resultant signal at the potentiometer is zero and produces an output signal when the resultant signal at the potentiometer is other than zero.

3,760,231

ELECTROMAGNETIC LIGHTER WITH AN APERTURED METAL CASING

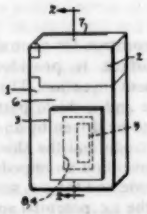
Hans Schindler, Engelsbach, Germany, assignor to Braun A.G., Frankfurt/Main, Germany

Filed Feb. 2, 1972, Ser. No. 222,940

Claims priority, application Germany, Feb. 28, 1971, P 21 42 295.7

Int. Cl. F23q *13/02*

U.S. Cl. 317—92 **5 Claims**



A pocket lighter having a metal housing including wide and narrow opposite sidewalls, and an electromagnetic igniter surrounded by said housing and including an electromagentic coil closely fitting in said housing. An aperture in each of the wide opposite sidewalls, said apertures being adjacent and larger than the electromagnetic coil to restrain the occurance of a condenser effect, and an electrically insulating protective cover plate closing each of said apertures.

3,760,232

SWITCHRACK FOR ELECTRIC MOTOR STARTERS AND CONTROLS

E. Leroy Swindell, 5 E. 51 St., Apt. 3A, New York, N.Y.

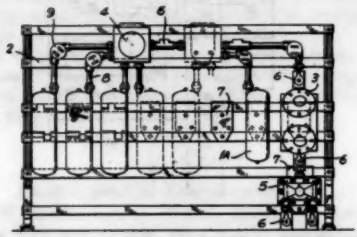
Filed June 16, 1972, Ser. No. 263,608

Int. Cl. H02b *1/04*

U.S. Cl. 317—99 **1 Claim**

An improved metal switchrack for mounting weatherproof and explosionproof self contained electric motor starters and electric motor controls as they are commonly manufactured and used by the electrical industry; and more particularly, as they are applied to motor control systems of the petroleum industry; chemical industry; and industries using motors and starters which are to be installed in areas surrounded by atmospheres containing hazardous concentrations of flammable gases, combustible dusts, ignitible fibers or flyings.

That which is new is an adaptable and adjustable prefabricated motor switchrack that can be erected at the site of installation which will accommodate mountings of any combination of self-contained electrical motor starters and self-contained electrical motor controls of standard sizes.



An infinite number of combination mountings of switchrack electrical components heretofore described are possible on my switchrack by utilizing an adjustable mounting plate which supports the electric motor starter or electric motor control. The adjustable mounting plate slides horizontally on a predrilled channel to the selected location and the aligning pins engage into the predrilled aligning holes and is clamped into final position by means of an adjustable pressure clamp.

3,760,233

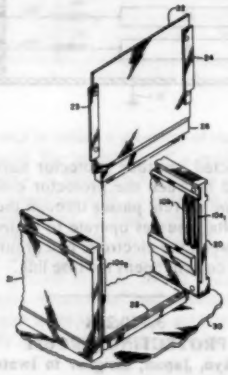
PRINTED CIRCUIT CARD GUIDE

James S. Warwick, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,523

Int. Cl. H02b *1/02*

U.S. Cl. 317—101 DH **7 Claims**



A device for guiding and supporting a printed circuit card incorporating electronic circuitry is disclosed. The device is of a long, narrow, rectangular form and is formed of a single sheet having a series of tabs formed on the four sides. Two separate devices are required to support each edge of the printed circuit card; the two devices are mounted parallely side-by-side on a suitable support member with the spacing between adjacent devices determined by the thickness of the supported card and the compressive strength of the opposing flanges of the two adjacent devices that make compressive contact with the card. Also provided are angulated flanges on the narrow ends of the device for guiding the inserted card between the compressively opposing flanges. The device may be formed of heat conductive and/or electrically conductive materials to function as a heat sink coupling means and/or as a ground/voltage bus for side-entry of printed circuit cards.

3,760,234

UNDERGROUND DISTRIBUTION SYSTEM FOR UTILITIES WITH METER PULLBOX

Richard Sterling Jones, 3922 S. 775 West, Bountiful, Utah, and George Michael Stevenson, 2080 W. 5900 South, Roy, Utah

Continuation-in-part of Ser. No. 770,915, Oct. 28, 1968, Pat. No. 3,596,141. This application July 16, 1971, Ser. No. 163,282

Int. Cl. H02b 9/00

U.S. Cl. 317—111 20 Claims

A system and apparatus for the underground distribution of utilities, notably electric power, includes a meter box with a housing having a portion of dome-like configuration with an open bottom, a mounting ring over which the housing portion closely fits for stability, and an upstanding meter-receiving panel rigidly carried by the mounting ring. A pullbox section may be provided as part of the meter box, as also may a lamp post portion rising upwardly from the dome-like portion and adapted to carry a luminaire for outdoor lighting. The panel is provided with bus bar mountings for electrical and meter plug-in connections. The housing is preferably hingedly attached to the mounting ring for free-swinging covering and uncovering movement relative to the meter-mounting panel.

3,760,235

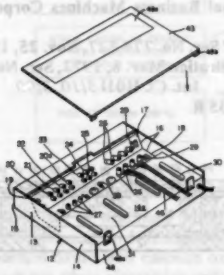
AMPLIFIER UNIT CASING HAVING RECESSED CONNECTOR TERMINAL SURFACE

Kazushi Takami, Higashiosaka; Yoshiro Koga, Ashiya; Yoichi Ide, Kadoma; Masatoshi Kubota, Osaka; Yoshiro Hirasawa, Kyoto; Noriki Matsumoto, Takatsuki, and Takao Miyake, Yao, all of Japan, assignors to Onkyo Kabushiki Kaisha, Osaka-shi, Japan

Continuation-in-part of Ser. No. 50,071, June 26, 1970, abandoned. This application Mar. 8, 1972, Ser. No. 232,795

Int. Cl. H02b 1/10

U.S. Cl. 317—118 9 Claims



An amplifier unit casing comprising a recess located in the rear of and relatively close to a front panel of the amplifier unit and below the level of an upper portion of the front panel, the recess having a surface which is adapted for installation thereon of adjusting attachments including semi-fixed variable resistors and terminals to be electrically connected to a speaker, tape recorder, record player or the like, wherein each conductor connected to such terminal is led to a speaker, tape recorder, record player or the like through a conductor guide space extending continuously from the recess to the rear end of the casing and provided on the upper wall of the casing and below the level of the upper portion of the front panel.

3,760,236

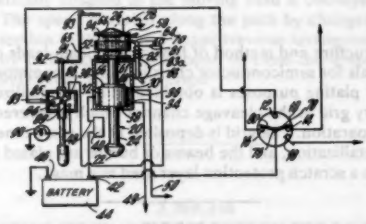
APPARATUS FOR AUTOMATICALLY EXTINGUISHING LIGHTS OF A VEHICLE

Jesse R. Hollins, 1 Chester Dr., Great Neck, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,274

Int. Cl. H01b 47/18

U.S. Cl. 317—142 TD 5 Claims



Apparatus for automatically extinguishing lights of a vehicle. The apparatus includes an ignition switch having "ON" and "OFF" contact terminals and at least one pole, a light control switch for turning the lights of the vehicle on and off, and a source of power coupled to the pole of the ignition switch and to the light control switch. Means are provided for automatically moving the light control switch to the "OFF" position for extinguishing the lights of the vehicle. There is also provided electric circuit means coupled to the "OFF" contact terminal of the ignition switch so that an electric current is supplied from the source of power through the "OFF" contact terminal of the ignition switch and to the electric circuit means for activating the automatic moving means when the pole of the ignition switch is electrically connected to the "OFF" contact terminal of the ignition switch.

3,760,237

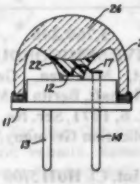
SOLID STATE LAMP ASSEMBLY HAVING CONICAL LIGHT DIRECTOR

Mary S. Jaffe, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed June 21, 1972, Ser. No. 264,861

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317—234 R 9 Claims



A lens cap is positioned over a light-emitting diode, and a somewhat conical-shaped plastic light director extends between and in intimate contact with the lens cap and the diode, the smaller end of the conical light director being at the

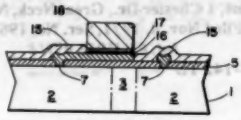
diode. A method of manufacture is disclosed in which a viscous plastic monomer is placed in the lens cap and/or on the diode and allowed to deform by gravity to form the conical light director.

3,760,238

FABRICATION OF BEAM LEADS

Colin A. Hamer, and Alberto Loro, both of Ottawa, Ontario, Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada

Filed Feb. 28, 1972, Ser. No. 229,993
Int. Cl. H01l 5/00
U.S. Cl. 317—234 R 13 Claims



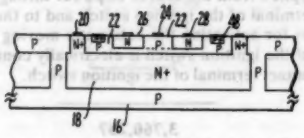
A structure and method of fabricating beam leads or bump terminals for semiconductor chips in which a common potential for plating purposes is obtained using a metallized short circuitry grid in the cleavage channel which is severed during chip separation. The grid is deposited at the same time as normal metallization, and the beams or bumps are plated through holes in a scratch protection layer used as a mask.

3,760,239

COAXIAL INVERTED GEOMETRY TRANSISTOR HAVING BURIED EMITTER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Ronald J. Hruby, Campbell; Steven B. Cress, Hacienda Heights, and William R. Dunn, San Jose, all of Calif.

Filed June 9, 1971, Ser. No. 151,412
Int. Cl. H01l 9/00
U.S. Cl. 317—235 R 8 Claims



The invention relates to an inverted geometry transistor wherein the emitter is buried within the substrate. The transistor can be fabricated as a part of a monolithic integrated circuit and is particularly suited for use in applications where it is desired to employ low actuating voltages. The transistor may employ the same doping levels in the collector and emitter, so these connections can be reversed.

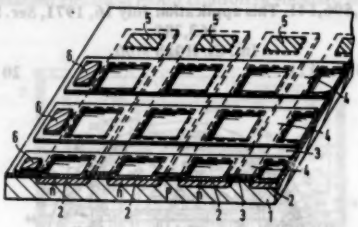
3,760,240

LIGHT-SENSITIVE SEMICONDUCTOR DEVICE

Hans-Eberhard Bergt, Munchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munchen, Germany

Filed Oct. 6, 1971, Ser. No. 186,969
Claims priority, application Germany, Oct. 8, 1970, P 20 49 507.2
Int. Cl. H01l 5/00
U.S. Cl. 317—235 R 8 Claims

Light sensitive semiconductor device with several light sensitive elements, mutually separated from each other, arranged in the form of a matrix in rows and columns on a doped semiconductor substrate. Each of the light sensitive elements has a rectifying hetero junction, which is formed by a thin, light transparent semiconductor layer made as an antireflex layer, and a first semiconductor region diffused into the semiconductor substrate or a second partial region diffused into the first semiconductor region. The thin light transparent semiconductor layer extends in rows on the semiconductor



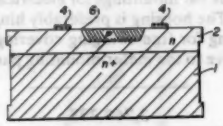
substrate isolated from the latter by an isolating layer. The diffused first semiconductor region extends in columns, into the surface of the semiconductor substrate. The light sensitive semiconductor layers, extending in the rows, and the diffused first semiconductor regions, extending in columns, are provided with barrier free contacts at the edges.

3,760,241

SEMICONDUCTOR DEVICE HAVING A RECTIFYING JUNCTION SURROUNDED BY A SCHOTTKY CONTACT

Richard R. Epple, Schwaigern, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed June 9, 1970, Ser. No. 44,798
Claims priority, application Germany, June 21, 1969, P 19 31 613.3
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 10 Claims



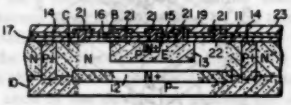
A semiconductor device comprises a semiconductor body having a junction such as a metal to semiconductor contact or a p-n junction surrounded by a metal to semiconductor contact.

3,760,242

COATED SEMICONDUCTOR STRUCTURES AND METHODS OF FORMING PROTECTIVE COVERINGS ON SUCH STRUCTURES

Michael C. Duffy, Wappingers Falls; Jacob Riseman, and Bevan P. F. Wu, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 778,527, Nov. 25, 1968, abandoned. This application Mar. 6, 1972, Ser. No. 232,235
Int. Cl. H01l 3/10, 3/00
U.S. Cl. 317—235 R 11 Claims



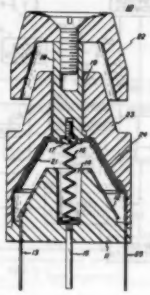
A semiconductor structure with a metallic oxide coated surface, a silicon nitride coating on the metal oxide and a covering coating of glass over the coated surface.

3,760,243

CAPACITIVE KEYSWITCH

Donald C. Peroutky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 21, 1972, Ser. No. 290,831
Int. Cl. H01g 5/16
U.S. Cl. 317—249 R 3 Claims



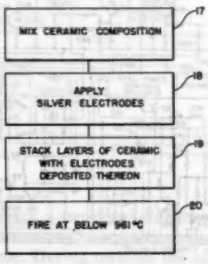
A variable capacitance keyswitch is disclosed in which a differential capacitor is formed by two fixed plates and a moveable plate therebetween. Each plate is in the shape of the frustum of a cone. Depression of the pushkey varies the capacitance between each fixed plate and the moveable plate over a range of about one order of magnitude, or greater. In addition, depression of the pushkey provides a push-pull capacitance variation between fixed and moveable plates, achieving an electrical snap action effect useful in typical bistable flip-flop circuitry.

3,760,244

CERAMIC CAPACITOR AND METHOD OF FORMING SAME

Roland Hill McClelland, Jr., San Diego, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 31, 1972, Ser. No. 285,160
Int. Cl. H01g 1/01
U.S. Cl. 317—258 23 Claims



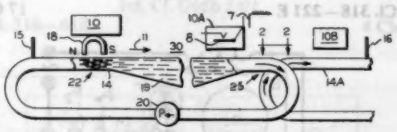
A ceramic capacitor is disclosed herein having ceramic layers formed of a composition of lead oxide, aluminum oxide, silicon oxide, barium oxide, and calcium oxide. Deposited on the ceramic layers are silver electrodes and the entire ceramic capacitor including the electrodes are fired at a temperature below 961°C which is below the melting temperature of the silver electrodes.

3,760,245

MAGNETIC CONVEYER SYSTEM

Harold W. Halvorsen, 8600 16th St., 106, Silver Spring, Md.

Filed Nov. 12, 1971, Ser. No. 198,162
Int. Cl. H02k 45/00
U.S. Cl. 318—38 18 Claims



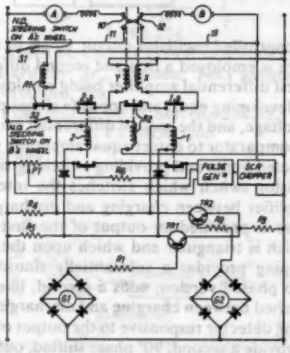
A magnetic conveyer system includes a pump passing a magnetic fluid through a pipe path along which a carriage magnetically coupled to the moving fluid is conveyed by the fluid. The speed is varied along the path by changes of fluid cross section in the pipe. A drape traverse arrangement has a plurality of hooks moved to open or close the drapes as the direction of fluid flow is reversed.

3,760,246

RELATIVE SPEED CONTROL SYSTEM FOR DC MOTOR VEHICLE DRIVE

David Gurwicz, Gateshead; Edwin Amitage Battye, Lymm, and James Wright, Winwick, all of England, assignors to Conveyancer Limited, Warrington and Sevcon Engineering Limited, Durham, England

Continuation-in-part of Ser. No. 13,151, Feb. 20, 1970. This application June 28, 1971, Ser. No. 157,416
Claims priority, application Great Britain, Feb. 25, 1969, 10,019/69
Int. Cl. H02p 5/46
U.S. Cl. 318—52 9 Claims

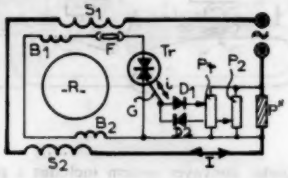


A control system for two DC motors driving the driving wheels of an electric vehicle. Sensing means detect a differential speed between the two motors and act to remove the voltage to the faster motor, to eliminate the speed differential, and simultaneously reduce the voltage to the other motor. Override means are preferably provided to enable the system to be bypassed when the vehicle is turning to allow the outer wheel to revolve faster than the inner wheel.

3,760,247
SINGLE-PHASE MOTOR WITH AUXILIARY COILS SELECTIVELY SHORT-CIRCUITED BY A SOLID STATE SWITCH ELEMENT

Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor, Lyon, France

Filed Nov. 10, 1971, Ser. No. 197,446
Claims priority, application France, Nov. 30, 1970, 7047330
Int. Cl. H02p 1/44
U.S. Cl. 318—221 E **17 Claims**

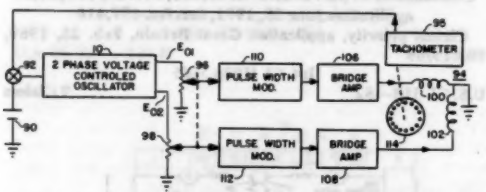


A single-phase, asynchronous motor of the split-pole type is provided with wound shading coils which are temporarily short-circuited during starting operation by a controlled solid-state switching element, to which is applied a triggering signal derived from the current flowing through the stator winding.

3,760,248
INDUCTION MOTOR CONTROL SYSTEM WITH VOLTAGE CONTROLLED OSCILLATOR CIRCUIT

Frank J. Nola; James R. Currie, and Harry Reid, Jr., all of Huntsville, Ala., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 19, 1972, Ser. No. 218,965
Int. Cl. H02p 5/34
U.S. Cl. 318—230 **5 Claims**



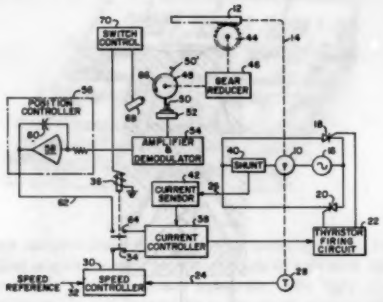
A voltage controlled oscillator circuit, single or two phased, in which there is employed a first and second differential amplifier, the first differential amplifier being employed as an integrator for developing equal and opposite slopes proportional to an input voltage, and the second differential amplifier functioning as a comparator to detect equal amplitude positive and negative selected limits and providing switching signals which gate a transistor switch which switches the integrating differential amplifier between charging and discharging modes, whereby there is provided an output of the first differential amplifier which is triangular and which upon the application of wave shaping provides a substantially sinusoidal output signal. A two phased version, adds a second, like, integrator which is switched between charging and discharging modes by a zero crossing detector responsive to the output of the first integrator to provide a second, 90° phase shifted, output.

3,760,249
COARSE-FINE ANALOG POSITIONING SYSTEM

John J. Connors, West Seneca, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1971, Ser. No. 129,502
Int. Cl. G05b 11/18
U.S. Cl. 318—592 **6 Claims**

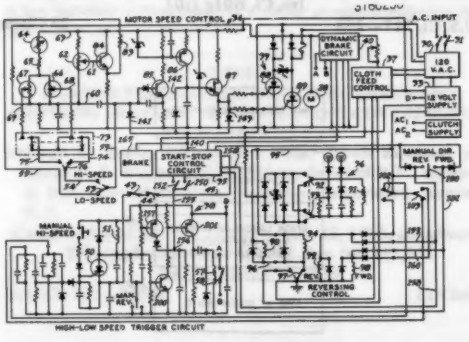
An accurate closed loop analog positioning system utilizing a linear sensor of the type employing a magnetic sensing element and a balance coil which acts basically as a transformer so as to eliminate direct current drift which is prevalent in most analog positioning systems. The magnetic sensing element is preferably mounted on the periphery of a disc of insulating material geared to a machine part which travels along a linear path of travel such that the disc will rotate through less than one complete revolution as the machine part moves from one end of its path of travel to the other. By causing the sensing element to rotate to a position where it is directly opposite the balance coil, the drive motor driving the machine part can be made to slow down and stop at that exact point.



3,760,250
EMERGENCY STOP CONTROL SYSTEM FOR CLOTH SPREADING MACHINE

Samuel H. Pearsall, Donelson, and Norman E. Witthauer, Jr., Nashville, both of Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Filed Sept. 11, 1972, Ser. No. 287,896
Int. Cl. H02h 7/00
U.S. Cl. 318—282 **7 Claims**



An electrically driven and controlled cloth spreading machine including means for controlling the high and low speeds, the braking, and reversing of a machine, characterized by an emergency switch system for de-energizing the drive of the machine and actuating the reverse control means, when the switch for shifting the controls from the high speed to the low speed mode fails to function.

3,760,251

APPARATUS FOR CONTROLLING A PLURALITY OF INJECTION MOLDING MACHINES

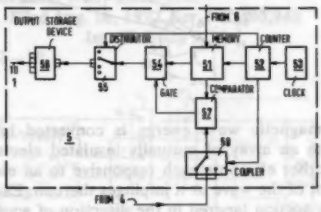
Rudolf Posl, and Burkard Popp, both of Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 12, 1972, Ser. No. 261,658

Claims priority, application Germany, June 14, 1971, P 21 29 419.9

Int. Cl. G05b *11/32*

U.S. Cl. 318—601 6 Claims



An apparatus for controlling a plurality of injection molding machines is disclosed wherein each injection molding machine is provided with a digital memory. The memories are provided with data from a central unit and are activated as a function of travel of appropriate machine parts of the respective molding machines.

3,760,252

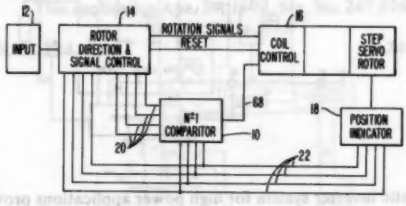
DAMPING OF A STEP SERVO MOTOR USING ONE STEP ANTICIPATION LOGIC

Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 5, 1972, Ser. No. 269,164

Int. Cl. G05b *5/01*

U.S. Cl. 318—611 4 Claims



A damping means for a stepper motor that will enable the motor to rotate between any two positions in either direction in a minimum of time. During rotation the actual position of the rotor is compared to the destination position and this comparison, in light of the direction of rotation, is utilized to determine when the rotor is one step from the destination. When the rotor reaches the point one step from the final position, a damping signal causes the energization of the stator coils thus producing a damping force that will prevent overshoot and oscillation about the destination position by gradually reducing the rate of angular rotation of the motor as it approaches the final position.

3,760,253

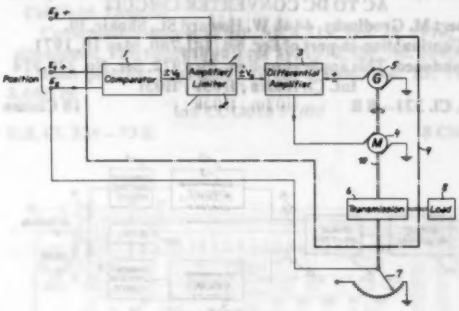
TWO-WAY DRIVE FOR OPTICAL SYSTEMS AND THE LIKE

Karl-Gunter Hess, Waldlaubersheim, Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach/Rhld., Germany

Continuation-in-part of Ser. No. 80,018, Oct. 12, 1970, Pat. No. 3,673,483. This application Jan. 12, 1972, Ser. No. 217,166

Int. Cl. G05b *5/01*

U.S. Cl. 318—618 4 Claims



A load, such as a servomotor for the positioning (e.g., tilting) of a television camera, is operable by a control circuit provided with an input (E_1) for a speed signal. The positioning signal is applied, together with a feedback signal (E_2) from a position sensor, to a comparator generating an error signal of corresponding polarity whose magnitude is controlled, in response to the speed signal, by a limiter in the output of the comparator. A reversible load motor, coupled with the position sensor, also drives a generator to produce a reference signal of either polarity, the difference between the error signal and the reference signal producing a drive voltage of one or the other polarity for the load motor until the system is in balance. The limiter includes two differentially connected amplifiers driven in parallel by the speed signal to produce a positive and a negative operating voltage of identical magnitudes for two transistors of opposite conductivity types simultaneously energized by the error signal.

3,760,254

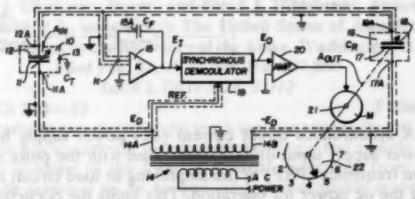
THREE-TERMINAL CAPACITIVE SERVOMECHANISM

Edward V. Hardway, Jr., Houston, Tex., assignor to Spearhead, Inc., Houston, Tex.

Filed Mar. 6, 1972, Ser. No. 232,153

Int. Cl. G05b *1/06*

U.S. Cl. 318—662 25 Claims



Three-terminal capacitive servomechanisms are disclosed using single and differential three-terminal capacitors, as the transmitting and receiving elements thereof. Each of the transmitter and receiver capacitors includes a conductive driven element connected to a source of electrical drive signals, a

conductive receptor element connected to a high gain amplifier, and shielding circuits connected to ground. The amplifier includes a capacitive feedback loop and clamps the receptor elements to virtual ground. The feed-through capacitances of the transmitter and receiver capacitors are unaffected by stray and cable capacitance thus permitting remote sensing, and the effect of conductance in these capacitors can be cancelled out by use of a synchronous demodulator connected to the output of the amplifier.

3,760,255

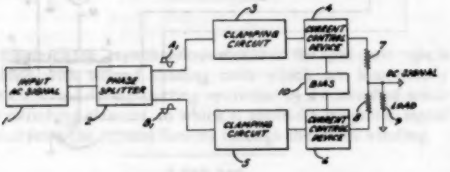
AC TO DC CONVERTER CIRCUIT

Robert M. Grodinsky, 4448 W. Howard St., Skokie, Ill.

Continuation-in-part of Ser. No. 141,780, May 10, 1971, abandoned. This application Feb. 25, 1972, Ser. No. 229,374

Int. Cl. H02m ; H03k ; H03f

U.S. Cl. 321—8 R **18 Claims**



An AC to DC converter for producing a varying DC signal proportional to the amplitude of the varying AC input signal, the converter including a pair of clamping circuits for providing output signals having DC components proportional to the AC amplitude of the AC input signal and AC components following the AC input signal, and where either the DC or the AC signal components of the outputs of the clamping circuits are of opposite sense while the other of same are of the same sense. Means are provided for combining the clamped signals so that the AC signal components are substantially cancelled and the DC signal components are added together.

3,760,256

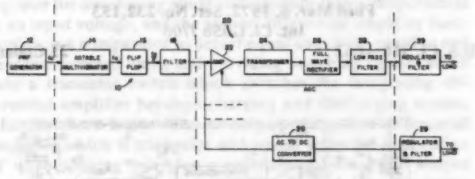
SYNCHRONOUS DC POWER SUPPLY

Gustaf J. Rast, Jr., and Thomas A. Barley, both of Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed July 31, 1972, Ser. No. 276,501

Int. Cl. H02m *1/12*

U.S. Cl. 321—9 R **5 Claims**



A synchronous direct current (dc) power supply has the power supply input drive synchronized with the pulse repetition frequency (PRF) of the amplifying or load circuit requiring the dc power for operation. This limits the occurrence of ripple components in the power supply output to the spectral positions of the PRF lines, eliminating ripple interference with signal processing in the load. An astable multivibrator is synchronized with the PRF generator output frequency. The multivibrator output is converted to a square wave, filtered, and processed to provide a fully rectified output voltage for coupling to the desired load circuit.

3,760,257

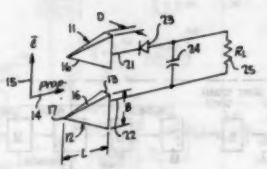
ELECTROMAGNETIC WAVE ENERGY CONVERTER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Robert L. Bailey, Gainesville, Fla.

Filed Sept. 27, 1972, Ser. No. 292,698

Int. Cl. H02m

U.S. Cl. 321—1.5 **19 Claims**



Electromagnetic wave energy is converted into electric power with an array of mutually insulated electromagnetic wave absorber elements each responsive to an electric field component of the wave as it impinges thereon. Each element includes a portion tapered in the direction of wave propagation to provide a relatively wideband response spectrum. Each element includes an output for deriving a voltage replica of the electric field variations intercepted by it. Adjacent elements are positioned relative to each other so that an electric field subsists between adjacent elements in response to the impinging wave. The electric field results in a voltage difference between adjacent elements that is fed to a rectifier to derive d.c. output power. The element pairs may be arranged in a two-dimensional array to provide power conversion of randomly polarized electromagnetic waves, such as sunlight.

3,760,258

STATIC INVERTER

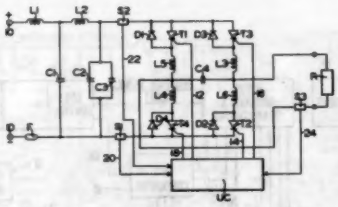
Marcello Percorini; Vittorio DiNunzio, and Giuseppe Careglio, all of Turin, Italy, assignors to Compagnia Italiana Westinghouse Freni e Segnali, Torino, Italy

Filed July 28, 1972, Ser. No. 276,251

Claims priority, application Italy, Dec. 29, 1971, 71265 A/71

Int. Cl. H02m *1/18*

U.S. Cl. 321—11 **8 Claims**



A static inverter system for high power applications providing built-in protection against short circuits appearing in either the inverter or the load. Thyristors arranged in a common bridge network of the inverter have their firing signals terminated when strategically located current sensors indicate, by means of a threshold circuit, that a short circuit has developed, in response to which an oscillating circuit produces a free oscillation of current to reverse bias of the thyristors during a semi-period of the oscillating cycle, thereby terminating current conduction by the thyristors for a duration sufficient to allow the thyristors to regain their normal resistance to forward conduction. In the non-conducting condition, the thyristors block current flow in the inverter system and accordingly protect the inverter components, as well as the thyristors themselves from damage due to excessive levels

of current. The system further includes means for periodically restoring the thyristor firing circuitry to provide for automatic resumption of normal inverter operation in the event the short circuit condition is only transient. If the short circuit condition still exists after a predetermined number of such restorations, the thyristor firing signals are permanently extinguished until the fault is corrected and the system is manually reset.

3,760,259

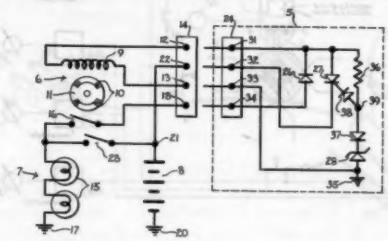
RECTIFIER-REGULATOR MODULE FOR ALTERNATOR-BATTERY ELECTRICAL SYSTEMS

Paul A. Tharman, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Aug. 16, 1972, Ser. No. 280,940

Int. Cl. H02p 9/30

U.S. Cl. 322—28 **3 Claims**



A regulator-rectifier module comprises a diode, an SCR having its gate connected with a resistor-zener diode regulating circuit, and a plug connector with four terminal members. One terminal member is connected with one side of each of the SCR and the diode, which are arranged for alternate conduction. A second terminal member is connected with the other side of the SCR, and a third with the other side of the diode, and the fourth is grounded. Connections to the plug connector are disclosed whereby half-wave regulated battery charging is effected with one module, full-wave operation with two.

3,760,260

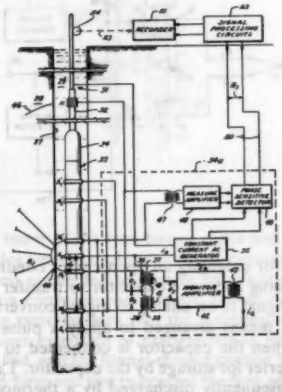
METHOD AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS BY EMITTING SURVEY AND AUXILIARY CURRENTS FROM THE SAME ELECTRODE

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 815,265, April 7, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,076

Int. Cl. G01v 3/18

U.S. Cl. 324—10 **34 Claims**



In accordance with illustrative embodiments of the present invention, an electrode array is utilized for investigating earth formations surrounding a mud filled borehold without undue influence from a conductive mud column. One manner of accomplishing this is to establish a potential distribution in the borehole as if the mud column were of the same resistivity as the formation. Alternatively, a zero potential gradient can be established at various regions in the mud column to effectively block current flow up or down the mud column.

3,760,261

PRINTED CIRCUIT CARD TEST UNIT

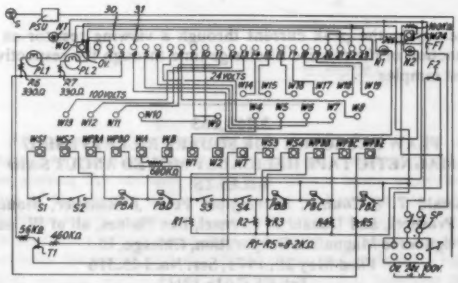
George Thomas Collins, 12 Blackwood Rd., Streetly, Sutton Coldfield, England

Continuation-in-part of Ser. No. 6,719, Jan. 29, 1970, abandoned. This application June 19, 1972, Ser. No. 264,308

Claims priority, application Great Britain, Jan. 23, 1970, 3,440/70

Int. Cl. G01n 31/00

U.S. Cl. 324—73 R **8 Claims**



A test assembly for testing circuitry on one of a plurality of different but generically related printed circuit cards each having a common type of edge connector comprises an edge connector socket adapted to receive said common edge connector, power supply means for providing suitable voltage levels for said circuitry, a plurality of wander leads for connecting selected terminals of said socket to a plurality of manually operable switches whereby pre-chosen voltage levels may be applied to selected portions of said circuitry on actuation of said switches, together with indicating means associated with said switches to indicate if said selected portions of the circuitry are functioning correctly.

3,760,262

ELECTROSTATIC SPARK IGNITION SENSITIVITY TEST APPARATUS AND METHOD

John J. Chovanec, Dover, and Floyd J. Hildebrant, Andover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

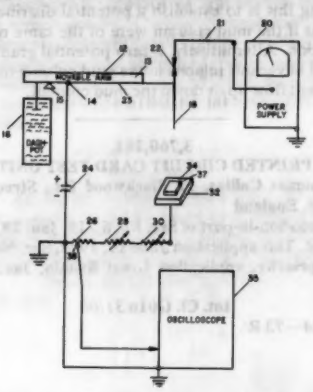
Filed Feb. 28, 1972, Ser. No. 229,803

Int. Cl. G01r 5/28, 31/12

U.S. Cl. 324—32 **7 Claims**

A variable gap electrostatic spark ignition sensitivity test apparatus has a: cathode terminal for holding a test sample, an anode terminal in the form of a needle separated from the cathode terminal by an air gap, and a controllable movable arm which holds the anode terminal and moves it toward said cathode terminal and test sample, a capacitor disposed intermediate to and in electrical connection with both the anode terminal and cathode means terminal through a series limiting and viewing resistance, wherein the capacitor may be charged to a desired voltage by a power supply and further wherein an arc discharge will occur when the anode terminal is moved sufficiently close to the test sample held on said cathod ter-

minal. The relative electrostatic spark ignition sensitivity of one test sample to another is measurable on an oscilloscope by



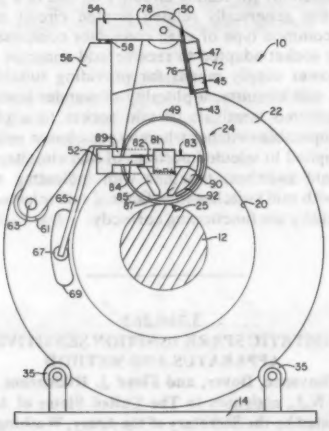
measuring the peak current through a viewing resistor as a function of the relative discharge time through the respective test samples.

3,760,263

FLAW DETECTOR FOR SQUARE BILLETS USING MAGNETIC TAPE HELICALLY MOVED ABOUT SAID BILLETS

Donald T. O'Connor, Barrington; Peter J. Rosauer, Mount Prospect, and Donald E. Lorenzi, Des Plaines, all of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed May 20, 1971, Ser. No. 145,316
Int. Cl. G01r 33/12
U.S. Cl. 324—37 **11 Claims**



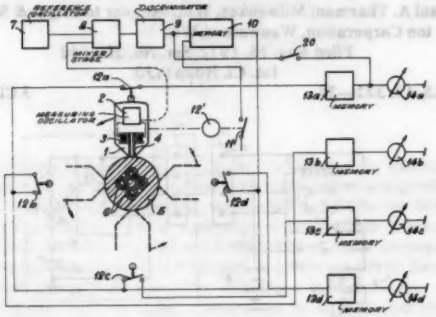
A method and apparatus for inspecting an elongated magnetic object for structural flaws includes a magnetic tape entrained for movement on a support structure, and the support structure and the object are moved relative to one another about a longitudinal axis of the object. The tape is moved through a predetermined path relative to the support structure and into pressure engagement with a peripheral surface of the object to be inspected so that a magnetic flux pattern along the peripheral surface of the object is recorded on the tape during relative rotation of the support structure and the object. A pick-up head disposed at a remote location along the path of movement of the tape reads the flux pattern recorded on the tape, and an erase head erases the recorded flux pattern after it is read from the tape by the pick-up head.

3,760,264

METHOD AND DEVICE FOR MEASURING MINIMA OR MAXIMA OF THE THICKNESS OF A DIELECTRIC LAYER ON AN ELECTRIC CONDUCTOR

Bruno Zumbach, Grunemattstr. 8, Orpund, Switzerland

Filed Apr. 22, 1971, Ser. No. 136,719
Claims priority, application Germany, Apr. 24, 1970, P 20 20 122.3
Int. Cl. G01r 33/00
U.S. Cl. 324—34 TK **8 Claims**



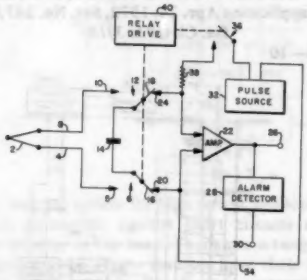
This invention relates to a method and a device for measuring minima or maxima of the thickness of a dielectric layer on electric conductor means having prominent portions, wherein a measuring head scans the surface of the layer and minima or maxima of the thickness of the dielectric layer are detected, stored and indicated. Several minima or maxima may simultaneously be indicated and compared with each other whereby it is possible to determine the general position of the conductor means in a dielectric and absolute extremum values of the thickness.

3,760,265

OPEN CIRCUIT DETECTION APPARATUS FOR THERMOCOUPLE CIRCUITS

Frederick S. Hutch, Warminster, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 16, 1972, Ser. No. 253,898
Int. Cl. G01r 31/02
U.S. Cl. 324—51 **6 Claims**



A circuit for detecting an open circuit condition of a thermocouple using a storage capacitor to transfer a thermocouple output signal to an analog to digital converter circuit and pulse signal means arranged to apply a pulse signal to the capacitor when the capacitor is connected to the analog to digital converter for storage by the capacitor. The stored pulse signal is subsequently discharged by a thermocouple circuit which is a complete circuit. An open-circuited thermocouple circuit will not discharge the pulse signal stored on the capaci-

tor, and the total stored signal will accumulate during subsequent successive switching of the capacitor between the open-circuited thermocouple circuit and the analog to digital converter until a sufficient charge has been accumulated to energize an alarm signal connected to the analog to digital converter.

3,760,266

CIRCUIT TESTER FOR CHRISTMAS TREE LIGHT SETS

Gerardo Ocasio, Bronx, N.Y., and Edwin Tuman, Chicago, Ill., assignors to Noma-World Wide Inc., Chicago, Ill.

Filed Oct. 14, 1970, Ser. No. 80,628
Int. Cl. G01r 31/02
U.S. Cl. 324—51 2 Claims

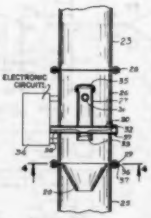
A simple and economical light circuit tester for use with a set of Christmas tree lights is provided. The circuit tester is composed of a plug having a single wire electrical lead connected to one prong of the plug. The single wire lead is connected in series with a light bulb mounted in a Christmas tree light socket. The light bulb is connected in series with a probe by means of the same single wire lead.

3,760,267

MOISTURE TESTER FOR CONTINUALLY FLOWING GRANULAR MATERIALS

D. Michael Williams, Rock Island, Ill., assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed Apr. 3, 1972, Ser. No. 240,423
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 6 Claims



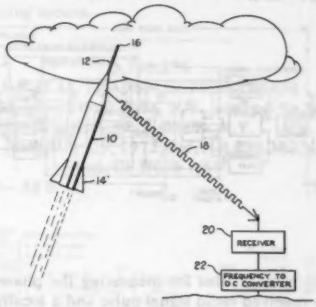
A moisture tester of the type having outer and inner cylindrical electrodes and means for measuring permittivity has an upper extension connected to receive by gravity samples of material from a conveyor and a lower, funnel-shaped outlet for discharging material back into the mainstream at a lower point. The upper extension of predetermined length is continually overfilled, and the funnel-shaped portion has an opening of required form and size to control the flow of material by gravity, and thereby to provide a desired close and consistent amount of packing between the electrodes.

3,760,268

ROCKET BORNE INSTRUMENT TO MEASURE ELECTRIC FIELDS INSIDE ELECTRIFIED CLOUDS

Lothar Ruhnke, Boulder, Colo., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 28, 1972, Ser. No. 248,469
Int. Cl. G01r 29/12
U.S. Cl. 324—72 3 Claims



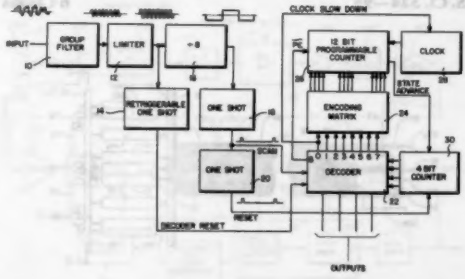
An apparatus for measuring the electric field in the atmosphere which includes a pair of sensors carried on a rocket for sensing the voltages in the atmosphere being measured. One of the sensors is an elongated probe having a fine point thereon, which causes a corona current to be produced as it passes through the electric field. An electric circuit is coupled between the probe and the other sensor and includes a high ohm resistor which linearizes the relationship between the corona current and the electric field being measured. A relaxation oscillator and transmitter are provided for generating and transmitting an electric signal having a frequency corresponding to the magnitude of the electric field.

3,760,269

MULTI-FREQUENCY TONE DETECTOR

Robert H. Beeman, and Lloyd A. Tarr, both of Berkeley, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 31, 1972, Ser. No. 285,394
Int. Cl. G01r 23/02; G04f 9/00
U.S. Cl. 324—78 D 10 Claims

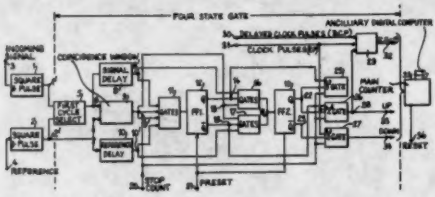


A multi-frequency tone detector wherein tone detection is accomplished by timing the interval or period of the input tone signal to determine its frequency. Preferably counting, or timing, is accomplished over more than one period, eight in a preferred embodiment, to reduce the effect of noise. A programmable counter is used, with the count thereof being programmed to establish recognition bandwidth limits. The programmable counter is reset each time it counts to a programmed lower or upper bandwidth limit, thus permitting a smaller counter and less memory and logic than otherwise would be required, to be used.

3,760,270
CIRCUIT ARRANGEMENTS FOR MEASURING THE INSTANTANEOUS PHASE DIFFERENCE BETWEEN TWO SIGNALS

James Ledson Irvin, Walton-on-Thames, England, assignor to Redifon Limited, London, England

Filed May 21, 1971, Ser. No. 145,800
Claims priority, application Great Britain, May 28, 1970, 25,750/70
Int. Cl. G01r 25/00; H03d 13/00
U.S. Cl. 324—83 D 9 Claims

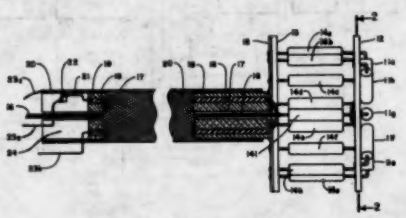


A circuit arrangement for measuring the phase difference between a received radio signal pulse and a locally-generated reference pulse, particularly for use in a hyperbolic navigation system receiver, by measuring the number of clock pulses occurring between a pair of signal and reference pulses and averaging a number of such counts to reduce phase error due to random noise. The ambiguity arising from averaging clock pulse counts for pulses with phase difference in the 0°, 360° region is avoided by the use of circuit elements including a four-state gate, two states of which relate to the normal sequence of alternate signal and reference pulses, to start and stop clock pulse counts, and the other two states of which relate to abnormal sequences of two successive signal pulses or two successive reference pulses, due to random noise phase errors, whereupon double upward counting and single downward counting of clock pulses is initiated, respectively.

3,760,271
MICROWAVE SURVEY METER

Stanley Monrad Bach, Jr., Hopkins; Leonard S. Smith, Minneapolis, and Reed E. Holaday, Minnetonka, all of Minn., assignors to Holaday Industries, Inc., Hopkins, Minn.

Filed June 7, 1971, Ser. No. 150,372
Int. Cl. G01r 21/04, 31/02
U.S. Cl. 324—95 6 Claims

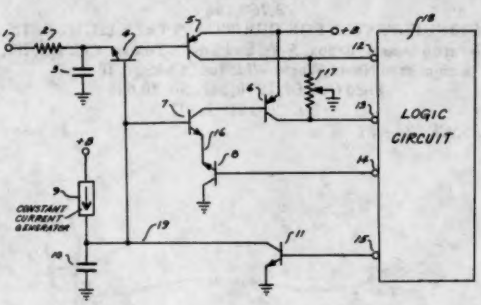


A device to measure low level near field microwave power density, such as leakage from a microwave appliance. A radial array of semiconductor diodes functions both as an antenna and a detector. The dc current generated in the array by an electric field causes a voltage drop across a load resistance. The voltage drop is a function of electric field strength and is measured by a sensitive dc voltmeter calibrated in power density. A switching sequence in the device provides both an internal battery check and an operational test of the diode array before the device is utilized to measure a microwave field.

3,760,272
HIGH IMPEDANCE SIGNAL LEVEL DETECTOR

Robert J. Battes, 25 E. Palatine Rd., Arlington Heights, Ill.

Filed Aug. 25, 1970, Ser. No. 66,832
Int. Cl. G01r 19/26, 17/06
U.S. Cl. 324—111 3 Claims

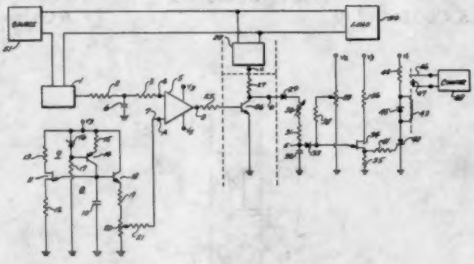


A high impedance signal level detector for use in electronic apparatus, such as instrumentation and the like, whereby pairs of electronic pulses may be generated in which the elapsed time between the pulses in each pair is as directly proportional as desired, or nearly so, to the amplitude of an applied DC voltage. Means are provided for the precise adjustment of the time between pulses in each pair to compensate for circuit component variations, or to provide a deliberately induced off-set in time between the pulses in each pair which is not related to the amplitude of the applied input signal voltage.

3,760,273
ELECTRONIC WATT HOUR METER

Wilford B. Burkett, Pacific Palisades, and George D. Carlsen, II, Playa Del Rey, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed June 24, 1971, Ser. No. 156,376
Int. Cl. G01n 21/00
U.S. Cl. 324—142 21 Claims



A method of measuring a selected unit of energy such as a watt hour comprising the steps of measuring the current flowing through a load, measuring the voltage across the load, generating a first series of periodic pulses related in width to the rms value of the current measured and related in amplitude to the rms value of the voltage measured, integrating the first series of pulses, and generating a second series of pulses related in number to the integral by generating a pulse each time that a capacitor is charged from the integrated signal to a predetermined voltage. The range of measurement is extended by modifying the method so that the first series of pulses are not directly integrated but rather are first converted to a second series of pulses from a constant current source which second series of pulses are integrated. The invention

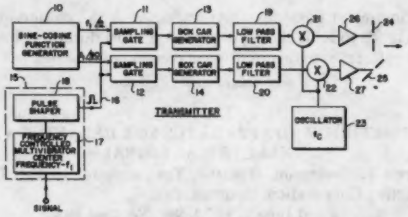
also relates to the electronic circuitry of a watt hour meter including means for generating a series of pulses having a width directly related to the measured current, means for multiplying the series of pulses representing the measured current and the unknown voltage, means for integrating the multiplied signal, and means for developing a series of pulses related in number to the integral by generating a pulse each time that a capacitor is charged from the integrated signal to a predetermined value.

3,760,274

MODULATION OF POLARIZATION ORIENTATION AND CONCURRENT CONVENTIONAL MODULATION OF THE SAME RADIATED CARRIER

Gottfried F. Vogt, Lincroft, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 13, 1971, Ser. No. 188,407
Int. Cl. H04b 7/00
U.S. Cl. 325—26 5 Claims



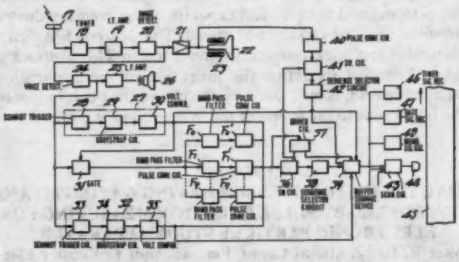
A radio transmission system comprising transmitting and receiving facilities for modulating and detecting respectively the orientation angle of linear polarization of a radiated carrier and including provision for concurrent conventional modulation of the carrier.

3,760,275

AUTOMATIC TELECASTING OR RADIO BROADCASTING MONITORING SYSTEM

Takashi Ohsawa, No. 4-5, Akasaka 8-chome, Minato-ku, Tokyo, and Michiaki Karita, No. 35-25, Naritahigashi 4-chome, Suginami-ku, Tokyo, both of Japan

Filed Dec. 28, 1970, Ser. No. 101,543
Claims priority, application Japan, Oct. 24, 1970, 45/93281
Int. Cl. H04b 1/16
U.S. Cl. 325—31 2 Claims



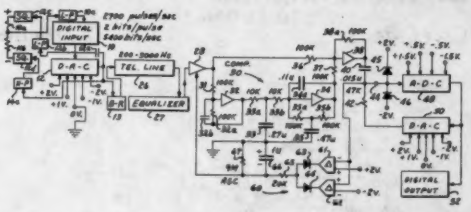
An automatic telecasting or radio broadcasting monitoring system. The system has a tuner and a start signal detector circuit coupled to the tuner for picking up a first arriving signal having a particular wave form from among a group of signals received by the tuner and containing information relating to a particular program. An end signal detector circuit is coupled to the tuner for picking up a last arriving signal having a different particular wave form from the first arriving signal from among the group of signals. A plurality band pass filters is coupled to the tuner for passing signals having predetermined different frequencies from the first and last arriving signals from among the group of signals between the first and last arriving signals. A plurality of temporary monitoring signal storing devices is coupled to the detector circuits and the filters each comprising a buffer storing device for temporarily storing at least the intermediate signals which have passed the filters. Each of the buffer storing devices further comprise means to read out the signals temporarily stored therein in response to the last arriving signal. A scanner circuit coupled to the temporary monitoring signal storing devices supplying the signals from the buffer memory devices in succession to a monitoring signal recording means.

3,760,276

DIGITAL TRANSMISSION SYSTEM

Richard S. Shenier, Forest Hills, N.Y., assignor to Savin Business Machines Corporation, Valhalla, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,302
Int. Cl. H04b 1/68
U.S. Cl. 325—38 B 80 Claims



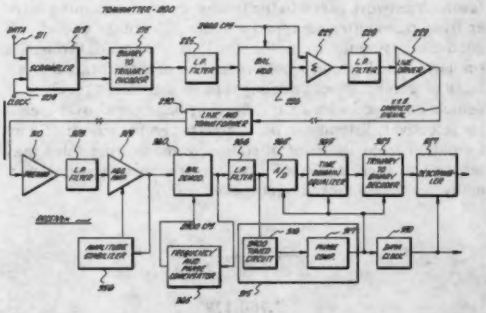
A digital transmission system wherein low-frequency signal components are suppressed in transmission but restored by a compensating circuit in response to the high-frequency signal components transmitted.

3,760,277

CODING AND DECODING SYSTEM WITH MULTI-LEVEL FORMAT

Sang Y. Whang, Miami, Fla., assignor to Milgo Electronic Corporation, Miami, Fla.

Filed May 17, 1971, Ser. No. 143,762
Int. Cl. H03k 13/00, 13/24; H04l 3/00
U.S. Cl. 325—38 A 9 Claims



The present invention is directed to a method and apparatus for coding and decoding data so that it may be transmitted from point to point in either a baseband system or in a carrier system. The method and apparatus involves forming a multi-bit group of binary signals (bits) and transmitting such signals with at least one bit and a fractional part of another bit of the group in an encoding period. In a preferred embodiment of my invention a pair of adjacent encoding periods are employed to fully identify all of the bits of a multi-bit group. My format

requires less bandwidth than prior art binary formats. Furthermore, my format, when employed with a three level system, also requires less bandwidth than any known prior art three level system.

The invention also includes an inherent error detection capability. Such inherent error detection is utilized at the receiver to automatically emit a decoded signal which has a high probability of being the correct signal that was transmitted. In addition, the invention readily provides a signal of a unique characteristic from which a decoding clock can be simply and easily derived.

3,760,278

LIMITED RANGE RADIOCOMMUNICATION SYSTEM

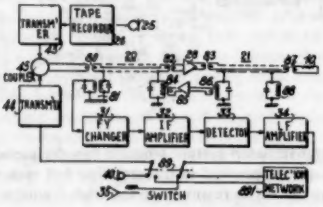
Jean Raymond Narbaits-Jaureguy, and Henri Billottet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 15, 1971, Ser. No. 208,172

Claims priority, application France, Dec. 23, 1970, 7046504; Apr. 9, 1971, 7112745

Int. Cl. H04b 1/00

U.S. Cl. 325—51 **16 Claims**



A fixed control station in a zone of high traffic density exchanges information with mobile stations aboard vehicles within that zone by short-range radiocommunication. The control station has an antenna in the form of a coaxial cable, with leakage losses, terminated by a dissipative load at one end while its other end is coupled to a transmitter supplying it with a frequency-modulated outgoing carrier destined for the vehicles within range. The outer conductor of the cable is grounded, at its end proximal to the load, through a parallel-resonant network tuned to the frequency of an incoming carrier from transmitter-equipped vehicles; the other end of this conductor, remote from the load, is grounded through a similarly tuned circuit whose inductive branch forms the primary of a transformer coupling it to an associated receiver. A vehicle equipped with a car radio may have switchover means for selectively listening in on a radio program or on traffic information from the control station; a monitoring relay may respond to such traffic information to reverse a switch normally positioned for radio reception.

3,760,279

BEAM CURRENT LIMITING CIRCUIT

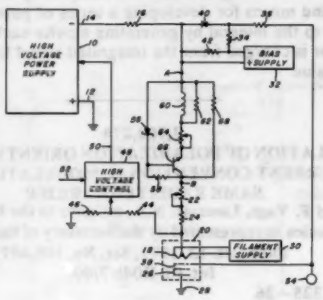
Ralph G. Rudolph, Edgewood Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 16, 1971, Ser. No. 181,131

Int. Cl. H02h 7/20

U.S. Cl. 328—8 **3 Claims**

A circuit for limiting the current supplied to the cathode of a grid controlled electron beam gun welder. When the current attempts to rise above a predetermined level because of a change of bias voltage, the voltage drop across a sensing resistor approaches that of a zener diode which clamps the base voltage of a transistor in the cathode circuit causing the transistor to shut off sufficiently to limit the current to the maximum set point level. An inductor in the cathode circuit also tends to limit beam current for a short duration change of bias voltage. Several circuits are connected in series.



3,760,280

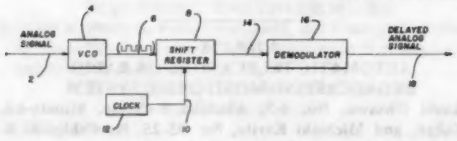
METHOD AND APPARATUS FOR DELAYING AN ELECTRICAL SIGNAL

Morris T. Covington, Houston, Tex., assignor to Taft Broadcasting Corporation, Houston, Tex.

Filed June 7, 1972, Ser. No. 260,585

Int. Cl. H03k 5/159, 5/00

U.S. Cl. 328—55 **7 Claims**



A system for actively delaying an electrial signal. The electrical signal to be delayed is converted into a frequency modulated signal. This FM signal is coupled to a digital memory device operating responsive to a control signal. The rate of the control signal and the physical capacity of the memory device determine the delay of the FM signal. The delayed FM signal is demodulated back into its original format. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,760,281

AXIAL TRAJECTORY SENSOR HAVING GATING MEANS CONTROLLED BY PULSE DURATION MEASURING FOR ELECTRONIC PARTICLE STUDY APPARATUS

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

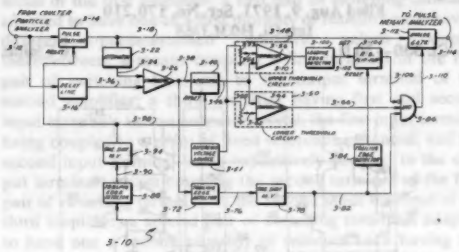
Continuation of Ser. No. 84,440, Oct. 27, 1970, Pat. No. 3,701,029. This application Sept. 21, 1972, Ser. No. 290,843

Int. Cl. H03k 17/02, 5/20

U.S. Cl. 328—91 **8 Claims**

An axial trajectory sensor for use with an electronic particle study apparatus, for differentiating between particles passing on or nearly on axial paths through the detecting zone of the apparatus and particles passing displaced from such an axial path. The sensor derives a duration-measuring pulse for each particle, with such duration being that of the particle

generated pulse at a fractional amplitude of the particle pulse. The sensor establishes a duration criteria, subjects each duration-measuring pulse to that criteria, and responds to each duration-measuring pulse by distinguishing between those longer and shorter than the duration criteria.



3,760,282

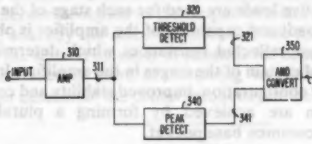
DATA RECOVERY SYSTEM

Robert W. Arnold, Glen Aubrey, and Louis V. Galetto, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,022

Int. Cl. H03k *5/20, 5/18*

U.S. Cl. 328—116 **5 Claims**



A system for recovering data subject to amplitude and phase variations including one or more threshold detectors having a hysteresis effect, a peak detector for detecting the positive and negative peaks of a data input signal voltage, gating circuits for logically combining the outputs the threshold detectors with the output of the peak detectors to recover data subject to amplitude and phase variations.

3,760,283

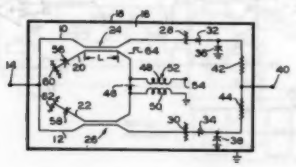
SAMPLING DEVICE

Larry R. Lockwood, McMinnville, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 23, 1971, Ser. No. 174,109

Int. Cl. H03k *5/00*

U.S. Cl. 328—151 **13 Claims**



A sampling device employing micro-strip components charges a pair of memory capacitors during predetermined sampling periods. Directional couplers, formed by input transmission lines and sampling pulse transmission lines, provide rectangular sampling pulses of predetermined duration. The sampling pulse is also substantially attenuated at the signal input.

3,760,284

CIRCUIT ARRANGEMENT FOR TAKING THE MEAN OF SEVERAL INPUT VOLTAGES

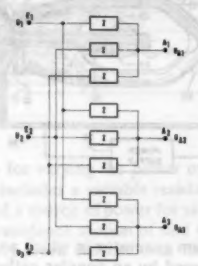
Edgar Matejka, Singen/Hohentwiehl, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen/Bodensee, Germany

Continuation of Ser. No. 175,581, Aug. 27, 1971, abandoned. This application Sept. 20, 1971, Ser. No. 181,819

Claims priority, application Germany, Sept. 18, 1970, P 20 46 140.9

Int. Cl. H03k *5/08;* **H02h** *7/20*

U.S. Cl. 328—158 **4 Claims**



A control apparatus has redundant input signals from which an output signal is produced. There is an input for each input signal respectively and a double-pole between the respective input and the common output. Each double-pole defines a predetermined magnitude of signal that it will pass and predetermined resistance below the threshold so as to limit the extent of the voltage step at the output by interference in a respective channel.

3,760,285

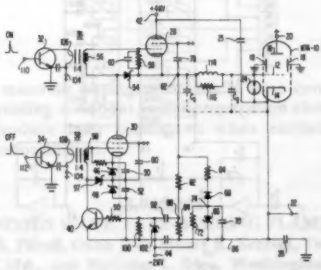
HIGH SPEED PULSER

Walter E. Milberger, Serverna Park; George W. Massing, Glen Burnie, and Charles M. Allen, Jessups, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 11, 1972, Ser. No. 270,776

Int. Cl. H03c *1/28*

U.S. Cl. 328—232 **12 Claims**



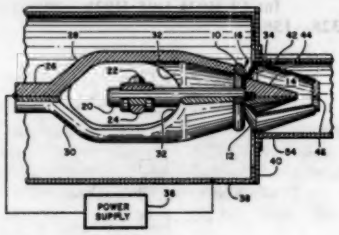
A hybrid combination of transistors and vacuum tubes for controlling the conduction of high frequency tubes such as klystrons and the like in respone to the resonant charging and discharging of the klystron's grid capacitance. A pair of mutually opposite conductive vacuum tube switches alternately operate to resonantly charge and discharge the tube capacitance through an inductance in response to a first trigger signal applied to turn the tube "on" and to a second trigger to turn the tube "off" in a bistable mode. In the event that the second trigger signal is not applied within a predetermined time period, or is missing, a transistor switch circuit causes the vacuum tube switches to operate in a monostable mode to automatically turn the klystron "off."

3,760,286

ELECTRON BEAM GENERATOR

John G. Kelly, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 18, 1972, Ser. No. 298,739
Int. Cl. H01j 29/54
U.S. Cl. 328—228 10 Claims



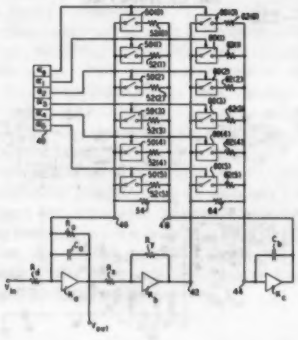
An electron beam generator in which an annular sheath of electrons is produced by an annular cathode and anode arrangement and injected in a converging manner to a focal point with a portion of the beam current returned to the center of the converging beam and through the center of the cathode annulus. Another portion of the beam current is fed back around the exterior of the converging beam.

3,760,287

DIGITALLY CONTROLLABLE VARIABLE ACTIVE RC FILTER

Cliff Andrew Harris, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 28, 1971, Ser. No. 172,717
Int. Cl. H03f 1/02
U.S. Cl. 330—9 23 Claims



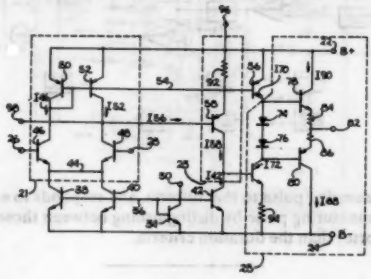
The several transmission characteristics of an active RC filter are adjusted by digital control of passive networks included at particular points in the filter circuit. Each network includes a plurlaity of passive circuit elements connected either in series or in parallel, each circuit element having a switching element in circuit relation thereto for selectively preventing current from flowing in the associated circuit element. Each switching element is uniquely controlled by the logical condition of a predetermined place of a binary control quantity. The values of the elements in a given network are related by a geometric progression such that the filter characteristic controlled by that network varies linearly with the associated binary control quantity.

3,760,288

OPERATIONAL AMPLIFIER

Paul L. Leonard, Torrance, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Aug. 9, 1971, Ser. No. 170,210
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 10 Claims



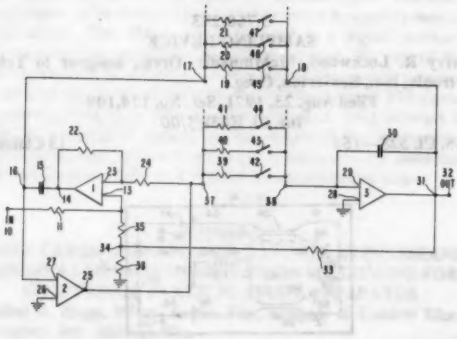
An operational amplifier having a broad bandwidth, very low power consumption and an externally variable bias current which adjusts the bias of various stages of the amplifier. The externally adjustable bias allows the adjustment of bias for various supply voltages and operating conditions and allows the operation of the amplifier on supply voltages as low as plus or minus one volt with a power dissipation as low as 60 microwatts. Active loads are used for each stage of the amplifier and the broadband capability of the amplifier is obtained by relatively low reflected resistances which determine the time constant of certain of the stages in the amplifier. In an integrated circuit configuration, improved stability and common mode rejection are achieved by forming a plurality of transistors in a common base pocket.

3,760,289

ACTIVE FILTER NETWORK HAVING A VARIABLE CENTER FREQUENCY

Gunnar Hurtig, III, Santa Clara, Calif., assignor to Kinetic Technology, Inc., Santa Clara, Calif.

Filed June 21, 1972, Ser. No. 265,095
Int. Cl. H03f 1/14
U.S. Cl. 330—51 4 Claims



An active filter network having a variable center frequency including a first amplifier having first and second input terminals and an output terminal, the first input terminal being resistively coupled to the output terminal; an input terminal to the network resistively coupled to the second input terminal of the first amplifier; a second amplifier having first and second input terminals and an output terminal, the first input terminal being coupled to a point of fixed reference potential, the

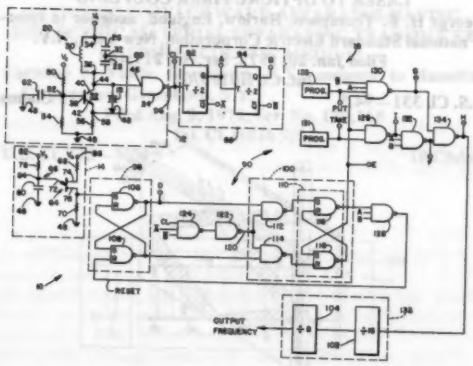
second input terminal being capacitively coupled to the output terminal of the first amplifier, and the output terminal of the second amplifier being resistively coupled to the input terminal of the first amplifier; a first pair of switching terminals adapted to have one of a first plurality of resistors each having different predetermined resistive values coupled therebetween; a means coupling a first terminal of the first pair of switching terminals to the output terminal of the second amplifier; a third amplifier having first and second input terminals and an output terminal, the first input terminal being coupled to a point of fixed reference potential, and the second input terminal being capacitively coupled to the output terminal; means coupling the second terminal of the first pair of switching terminals to the second input terminal of the third amplifier; a second pair of switching terminals adapted to have one a second plurality of resistors each having different predetermined resistive values coupled therebetween; a means coupling the first terminal of the second pair of switching terminals to the second input terminal of the second amplifier; a means coupling the second terminal of the second pair of switching terminals to the output terminal of the third amplifier; a pair of series-connected resistors having a connecting terminal therebetween and two other terminals; a means resistively coupling the output terminal of the third amplifier means to the connecting terminal of the pair of series-connected resistors; a means coupling the first of the other two terminals of the series-connected resistors to a point of fixed reference potential; a means coupling the second of the other two terminals of the series-connected resistors to the second terminal of the first amplifier; and an output terminal of the network coupled to the output terminal of the third amplifier, whereby the selection of one of the first plurality and one of the second plurality of resistors for connection into the first and second pairs of switching terminals respectively, together determine the center frequency of the network.

3,760,290

CRYSTAL CONTROLLED VARIABLE FREQUENCY OSCILLATOR

Philip L. Epstein, Elizabeth, N.J., assignor to Quinder Electronics, Inc., Springfield, N.J.

Filed June 16, 1972, Ser. No. 263,542
Int. Cl. H03b *21/00*
U.S. Cl. 331—40 **10 Claims**



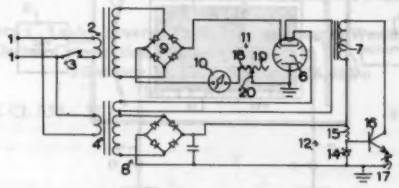
A crystal oscillator frequency and a shift oscillator frequency are selectively combined in a PUT and TAKE circuit comprising digital dividers and logic gating for generating an output signal at a center frequency, at a high frequency and at a low frequency. The center frequency is governed by the crystal oscillator, the high and low frequencies are determined by the center frequency plus and minus the shift frequency of the shift oscillator.

3,760,291

POWER SUPPLY FOR HEATING MAGNETRON

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J.

Continuation-in-part of Ser. No. 841,507, July 14, 1969. This application Nov. 26, 1971, Ser. No. 202,314
Int. Cl. H03b *3/14*
U.S. Cl. 331—86 **13 Claims**



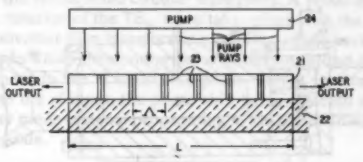
A power supply for varying the power output of a heating magnetron which includes a variable resistance in series with said magnetron and a source of power for said magnetron, and where the lowest resistance section of said variable resistance is designed to carry more current than the other resistance sections.

3,760,292

INTEGRATED FEEDBACK LASER

Herwig Werner Kogelnik, Fair Haven, and Charles Vernon Shank, Laurence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 100,659, Dec. 22, 1970, abandoned. This application Mar. 25, 1971, Ser. No. 128,165
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 C **12 Claims**



Active materials having substantially time constant, spatially alternating variations in the propagation characteristics thereof produce laser oscillations when excited above a threshold of oscillation.

3,760,293

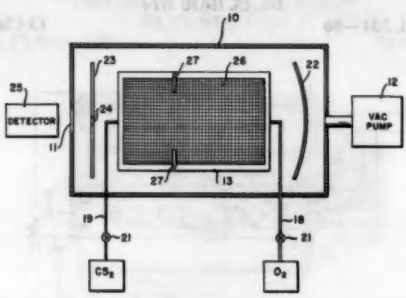
CONTINUOUS WAVE, FREE-BURNING FLAME LASER

Herschel S. Pilloff, Oxon Hill; Stuart K. Searles, Temple Hills, both of Md., and Nicholas I. Djeu, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 229,142
Int. Cl. H01s *3/22, 3/09*
U.S. Cl. 331—94.5 **4 Claims**

This disclosure is directed to a self-sustaining infrared continuous wave laser in which laser oscillation is achieved from a free-burning flame in a vacuum. Laser action is maintained as long as the chemical agents are supplied and burned. CS_2 and O_2 are injected from alternate tubes and burned together to form CO with a population inversion between vibration-rotation levels. The optical cavity is formed by spaced dielectrically coated mirrors each having a reflectivity of approximately 99.2 percent. One of the mirrors has a centrally located

hole, for output coupling. The flame is ignited by a glow discharge several inches above the burner. The discharge is



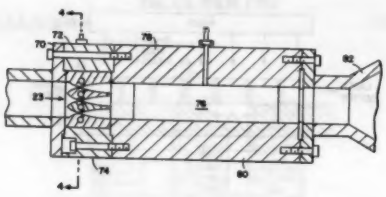
turned off once the flame is started. The system will produce laser oscillations as long as the supply of chemicals are maintained.

3,760,294

THERMAL MIXING GAS LASER

Thomas G. Roberts; Guilford J. Hutcheson, and Charles M. Rust, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 27, 1971, Ser. No. 183,834
Int. Cl. H01s *3/09*, *3/22*
U.S. Cl. 331—94.5 **4 Claims**



A laser having a gas generating section that delivers a flow of hot nitrogen gas (N_2) to a nozzle. The N_2 is expanded through the nozzle to achieve supersonic flow of the N_2. The nozzle includes injection ports positioned so as to inject cold carbon dioxide gas (CO_2) into the N_2 flow at a point in the nozzle where flow is supersonic, just downstream of the throat. The injection of a cold gas enhances population inversion in the cold gas. Thorough mixing of the hot and cold gases occurs prior to exit of the gases from the nozzle. The gases exhaust from the nozzle into a lasing chamber wherein laser energy is extracted from the flow.

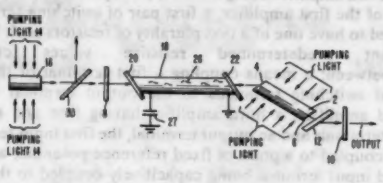
3,760,295

Q-SWITCH FOR SYNCHRONIZING MODE-LOCKED LASER PULSE TRANS WITH EXTERNAL EVENTS

John R. Lankard, Mahopac, and Peter P. Sorokin, Millwood, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1972, Ser. No. 255,361
Int. Cl. H01s *3/11*
U.S. Cl. 331—94.5 **6 Claims**

A capacitive discharge in cesium vapor is used to realize an externally controllable Q-switch synchronizing the appearance of pulse trains from a passively mode-locked



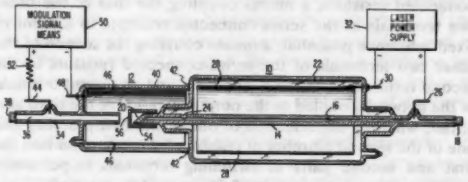
neodymium glass laser with other events occurring on a microsecond time scale.

3,760,296

INTERNALLY-MODULATED GAS LASER

Karl Gerhard Hernqvist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 26, 1972, Ser. No. 266,074
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **8 Claims**



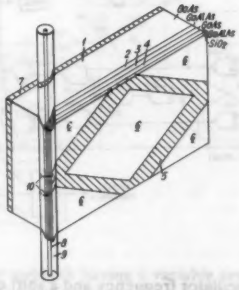
An internally-modulated gas laser employing a first discharge tube for generating laser wave energy in which modulation is effected by a second discharge tube which includes solely two electrodes, one of which is a cold cathode and the other of which is an anode. Preferably the first and second discharge tubes and the optical resonant cavity mirrors are physically attached to one another to provide a single unitary structure.

3,760,297

LASER TO OPTICAL FIBER COUPLING

George H. B. Thompson, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,464
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **15 Claims**



An optical fiber is coupled along an edge of a rectangular GaAs injection laser. A circulatory mode of light reflection is established between the four side walls of the laser at an angle of incidence which provides a narrow rectangular strip of

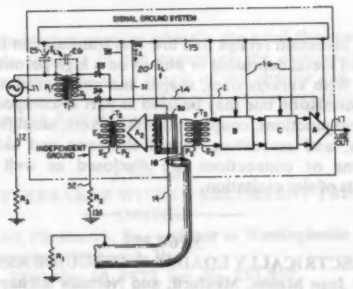
light. The fiber is positioned transversely at one reflection point or corner of the light path. A narrow rectangular metal strip contact on one face of the laser confines current to the desired path. A reflective coating on an end of the fiber may provide a unidirectional optical source. Other variations include an optical amplifier for a light input source and an optical coupler from an input fiber to an output fiber.

3,760,298

CIRCUIT FOR SUPPRESSING LEAKAGE CURRENTS FLOWING INTO AN UNDERGROUND CABLE SHEATH

Robert H. Pell, Andover, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 5, 1972, Ser. No. 269,002
Int. Cl. H04b *3/28*
U.S. Cl. 333—12 **3 Claims**



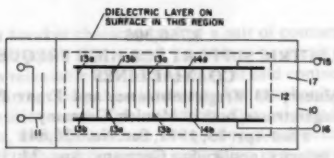
A circuit for suppressing leakage currents flowing into an underground or underwater cable sheath for a cable carrying low-level signals into or out of a receiver or transmitter system having a current sensing means associated with a conductor means connecting the system ground to the cable sheath to detect leakage current used to generate a voltage in a coupling means between the system ground and earth ground to bypass the leakage currents through the coupling means minimizing leakage current interference with the low-level signals.

3,760,299

ACOUSTIC SURFACE WAVE-APPARATUS HAVING DIELECTRIC MATERIAL SEPARATING TRANSDUCER FROM ACOUSTIC MEDIUM

Carmine F. Vasile, Greenlawn, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,168
Int. Cl. H03h *9/30*
U.S. Cl. 333—30 R **10 Claims**



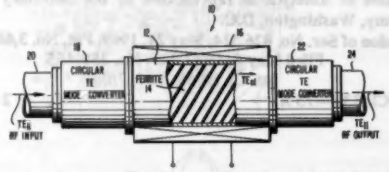
Disclosed are acoustic surface wave apparatus which utilize a novel transducing system to couple energy to and from an acoustic surface wave propagation medium. The transducing system includes a conventional electromechanical transducer having a plurality of fingers for coupling energy to or from the medium. To minimize bulk wave scattering and reradiation which would normally occur when surface waves propagating in a high piezoelectric medium encounter these fingers, the transducing system further includes a dielectric material which separates the fingers from the medium. In a specific embodiment this dielectric material consists of a relatively thin layer of low piezoelectric, low dielectric constant material, coating a portion of the surface of the propagating medium.

3,760,300

REDUCED LOSS PHASE SHIFTER UTILIZING FARADAY ROTATOR

Henry C. Leahy, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,488
Int. Cl. H01p *1/18*
U.S. Cl. 333—31 A **8 Claims**



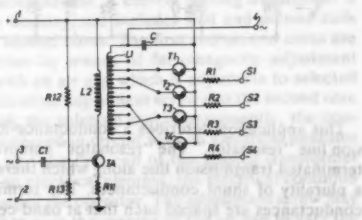
Method and apparatus for reducing the loss in a microwave phase shifter by the use of circular TE_{n1} modes where n is greater than unity. The apparatus comprises: a ferrite filled circular waveguide having a diameter sufficiently large to propagate TE_{21}, TE_{31} or higher modes; a solenoid adapted to be operated so as to provide a Faraday rotation on the electromagnetic fields propagated in the ferrite filled waveguide; and a pair of circular TE mode transducers or converters respectively coupled to each side of the circular waveguide where for example a circular TE_{11} mode rf input signal is fed into the first mode converter. The rf is transformed into a selected higher TE_{n1} mode where $n>1$ and where it is fed through the ferrite filled circular waveguide. A predetermined Faraday rotation of the TE_{n1} wave takes place with the second mode converter then transforming the TE_{n1} signal back to the input mode which then comprises an rf output shifted in phase with respect to the rf input, the phase shifted in phase with respect to the rf input, the phase shift being effected through the higher mode rf signal propagating in the ferrite filled circular waveguide.

3,760,301

SWITCHABLE BAND-PASS FILTER HAVING RESONANT CIRCUIT ENERGIZED INDUCTIVELY FROM CONSTANT CURRENT SOURCE

Kjell Goransson, Sodertalje, and Jan-Ake Dahlgren, Alvsjo, both of Sweden, assignors to Sonab Development AB, Vallingby, Sweden

Filed Dec. 5, 1972, Ser. No. 312,371
Claims priority, application Sweden, Dec. 6, 1971, 15640/71
Int. Cl. H03h *7/10*
U.S. Cl. 333—70 R **4 Claims**



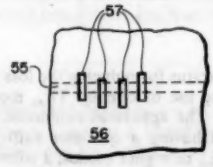
A band-pass filter device, which can be switched selectively between several different frequencies, comprises a parallel

resonance circuit containing a capacitance and a coil provided with several taps and switching means connected to the taps on the coil for inserting selectively and alternatively differently large portions of the coil into the resonance circuit. The resonance circuit is energized inductively from a constant current source through the coil of the resonance circuit. The input signal to the filter is applied as a control signal to the constant current source and the output on the filter device is connected across the resonance circuit.

3,760,302
SLOT LINE

Seymour B. Cohn, Tarzana, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 826,314, May 21, 1969, Pat. No. 3,688,225. Filed May 4, 1972, Ser. No. 250,455
Int. Cl. H03h *7/04, 7/08*
U.S. Cl. 333—73 R **2 Claims**

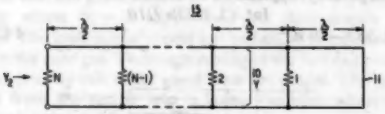


This invention relates to a low loss transmission line having a slotted metal deposited or etched on a high permittivity substrate. with various sizes, shapes and configurations of slots, the transmission line may be used as part of components such as hybrid junctions, couplers, filters, mixers, amplifiers, ferrite devices, and resonators. Novel slot/coax and slot/stripline junctions or connections are disclosed as well as novel methods of slot excitation.

3,760,303
CONDUCTANCE-LOADED TRANSMISSION LINE RESONATOR

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 25, 1972, Ser. No. 283,827
Int. Cl. H03h *7/04, 7/14;* **H01p** *1/24*
U.S. Cl. 333—73 R **13 Claims**

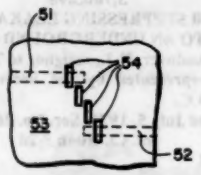


This application describes a conductance-loaded transmission line "resonator." The "resonator" comprises a reactively terminated transmission line along which there are connected a plurality of shunt conductances. The termination and the conductances are spaced such that at band-center, each conductance is in the region of a voltage null. The use of such a conductance-loaded transmission line as the resonator of an oscillator, and as the frequency selective portion of a filter are described.

3,760,304
SLOT LINE

Seymour B. Cohn, Tarzana, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 826,314, May 21, 1969, Pat. No. 3,688,225. This application May 4, 1972, Ser. No. 250,457
Int. Cl. H03h *7/04, 7/08*
U.S. Cl. 333—73 R **2 Claims**

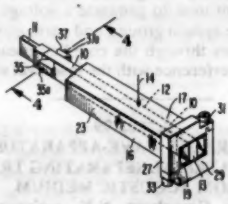


This invention relates to a low loss transmission line having a slotted metal deposited or etched on a high permittivity substrate. With various sizes, shapes and configurations of slots, the transmission line may be used as part of components such as hybrid junctions, couplers, filters, mixers, amplifiers, ferrite devices, and resonators. Novel slot/coax and slot/stripline junctions or connections are disclosed as well as novel methods of slot excitation.

3,760,305
DIELECTRICALLY LOADED WAVEGUIDE ASSEMBLY

Robert Jean Mason, Medford, and Norman Richard Landry, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,183
Int. Cl. H01p *3/12, 1/00*
U.S. Cl. 333—95 R **8 Claims**



A body of gyromagnetic material closely fitted within a flexible waveguide is supported by means of an external clamp and a pair of dielectric guides.

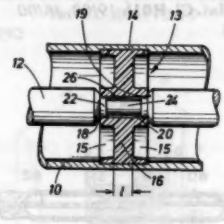
3,760,306
DIELECTRIC SUPPORT FOR HIGH FREQUENCY COAXIAL LINES

Georg Spinner, 33 Erzgiesseistrasse, and Franz Pitschi, 44 Nederlingerstrasse, both of Munich, Germany

Filed Apr. 23, 1971, Ser. No. 136,841
Claims priority, application Germany, Apr. 24, 1970, P 20 20 173.4
Int. Cl. H01p *1/00*
U.S. Cl. 333—97 R **1 Claim**

A coaxial structure employing a dielectric support positioned and secured within an outer conductor and having a central opening for receiving a short conductive member for joining two sections of coaxially aligned inner conductors whose end faces engage the end faces of the dielectric support member adjacent a central opening provided therein for receiving the short conductive member. The diameter of the

short conductive member is less than the diameter of the central opening in the dielectric support to form a hollow, annular-shaped air gap for eliminating the occurrence of damaging peak field strength within the coaxial structure. The side faces of the dielectric support are each provided with annular-



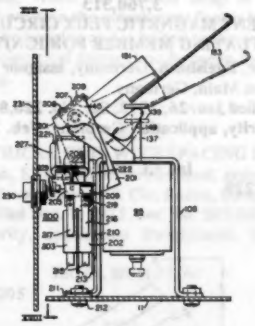
shaped compensation grooves wherein the axial thickness of the dielectric support in the region of the compensation grooves is less than the axial length of the annular gap. The size of the annular gap is selected to prevent the occurrence of inadmissable peak field strength.

3,760,307

CIRCUIT BREAKER WITH OVERCURRENT TRIP SWITCH

Nagar J. Patel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1972, Ser. No. 251,957
Int. Cl. H01h 71/46
U.S. Cl. 335—13 **9 Claims**



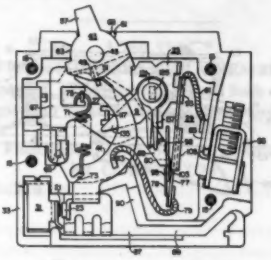
A circuit breaker characterized by a pair of contacts operable between open and closed positions, a circuit breaker mechanism releasable to effect opening of said contacts, a trip structure for latching the circuit breaker mechanism in the closed position and for releasing the circuit breaker mechanism, the trip structure comprising a coil-actuated rod and an electromagnetic means responsive to a current overload for releasing the rod from a non-trip position, biasing means biasing the rod to the tripping position, switch means for opening and closing a circuit to auxiliary apparatus, the switch means having a trip lever movable between first and second positions of the switch means, and a cam lever operatively connected with the coil actuated rod and movable across the path of movement of the trip lever for moving the trip lever from the first to the second position, whereby upon movement of the rod to the tripping position, the switch means is actuated to one of the open and closed positions.

3,760,308

CIRCUIT BREAKER SYSTEM

John J. Misencik, Shelton, Conn., and Charles E. Nystrom, deceased, late of Derby, Conn. (by Mae Nystrom, administratrix), assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,284
Int. Cl. H01h 75/12
U.S. Cl. 335—35 **9 Claims**



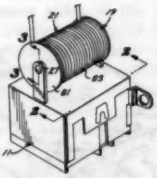
A circuit breaker system characterized by at least two circuit breakers in side-by-side relationship and having improved interconnecting trip means for automatically tripping one breaker when the other breaker is tripped in response to overload current conditions, the trip means including a trip cam having an elongated flexible member to effect direct contact with the magnetic armature on a bimetal element of the circuit breaker whereupon movement of the trip means in one circuit breaker automatically results in tripping of the adjacent circuit breaker.

3,760,309

ADJUSTABLE ACTUATING LEVEL CURRENT SENSING RELAY

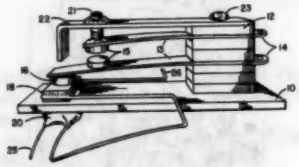
Harold A. McIntosh, South Pasadena, and George A. Yeaman, Fallbrook, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed June 22, 1972, Ser. No. 265,332
Int. Cl. H01h 47/00
U.S. Cl. 335—1 **9 Claims**



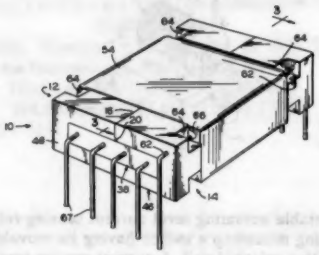
An adjustable actuating level current sensing relay including a housing mounting a switch having its movable contact coupled with a solenoid coil. A current sensing transformer is mounted on the housing and includes first and second coils having first and second cores. The first and second cores are connected together by means of ferromagnetic adjustment means formed with an air gap which is adjustable to selected spacings by means of an adjustment screw and the second core is connected with the solenoid coil. Consequently, the contacts may be connected in circuit with an electrical operator to be operated, and the first coil of the sensing transformer connected with an electrical element, the electrical condition of which is to control the operator. The adjustment screw may then be adjusted to vary the spacing of the air gap to vary the electromagnetic coupling between the first and second transformer coils to provide for closure of the switch at the desired level of current in the second transformer coil.

3,760,310
THERMOFERRITE SWITCH WITH PTC RESISTOR TEMPERATURE COMPENSATION
Kenneth G. Carson, New Market, Ontario, Canada, assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 11, 1972, Ser. No. 252,173
Claims priority, application Canada, Aug. 6, 1971, 120024
Int. Cl. H01h 61/013
U.S. Cl. 335—146 6 Claims



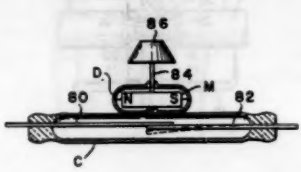
Disclosed are temperature responsive switches wherein a permanent magnet cooperates with a piece of thermoferrite (TF) to close or open contacts depending on whether the temperature of the TF is below or above its Curie point and hence is or is not attracted by the magnet. A positive temperature coefficient (PTC) resistor is connected electrically in series with the TF and is in intimate heat conducting relationship with it. The TF and PTC resistor are heated by passing current through them and the PTC resistor limits the ultimate temperature attained by greatly increasing its resistance as a predetermined upper limit temperature is attained.

3,760,311
REED RELAY
Robert A. Zimet, Portland, and James B. Bain, Gresham, both of Oreg., assignors to Datron Systems, Inc., Parsippany, N.J.
Filed Apr. 17, 1972, Ser. No. 244,679
Int. Cl. H01h 1/66, 51/28
U.S. Cl. 335—152 10 Claims



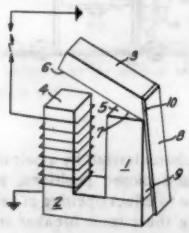
A reed relay includes a hollow plastic bobbin having reed contacts extending therewithin and a coil wrapped therearound. The coil functions not only to provide the magnetic field for drawing the contacts together, but also closes off an aperture initially provided for contact adjustment, whereby the contact area is protected from the surrounding environment. In one embodiment the operating coil secures bobbin portions in engaged relation, while in another embodiment the apertured construction enables one-piece forming of the relay.

3,760,312
MAGNETICALLY ACTUATED REED SWITCH ASSEMBLY
Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va.
Division of Ser. No. 236,598, March 21, 1972. This application Oct. 20, 1972, Ser. No. 299,273
Int. Cl. H01h 19/00, 36/00
U.S. Cl. 335—205 47 Claims



A magnetically actuated reed switch assembly comprising contact means including first and second cooperating magnetically actuated reeds in spaced relation to each other, a permanent magnet rotatable about an axis transverse to the longitudinal axis of the reeds and positioned with respect to the contact means so that its force field at certain positions of its rotation operates to influence the contact means to open or close, the contact means and magnet being encased in a housing assembly including contact and magnet supporting chambers.

3,760,313
PERMANENT MAGNETIC FLUX CIRCUIT AND AN ACTUATING MEMBER FOR IGNITERS
Hans Schindler, Egelsbach, Germany, assignor to Braun A.G., Frankfurt am Main, Germany
Filed Jan. 26, 1972, Ser. No. 220,817
Claims priority, application Germany, Feb. 28, 1971, P 21 42 294.6
Int. Cl. H01f 7/08
U.S. Cl. 335—229 10 Claims

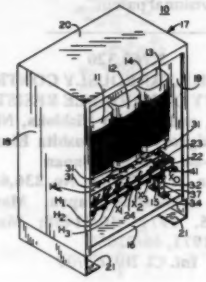


An electromagnetic combination for igniters having a permanent magnetic flux circuit including a permanent magnet, an L-shaped soft iron core and an armature, said armature in the closed position closes the magnetic flux circuit and in the open position interrupts the magnetic flux circuit; and an energy storing operating member connected to the armature and extending from the magnet at an operating angle that is sufficiently large to move the armature from the closed position to the open position, when actuated.

3,760,314
TRANSFORMER WITH IMPROVED ARRANGEMENT FOR PROVIDING A GROUNDING CONNECTION

Chester A. Kraslenko, and Stanley G. Harmeyer, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Feb. 2, 1973, Ser. No. 328,890
Int. Cl. H01f 15/10
U.S. Cl. 336—192 **9 Claims**

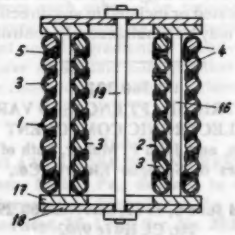


A dry-type transformer including a housing with a core and coil assembly mounted in the housing. An electrically insulative terminal board is mounted in the housing and a plurality of terminals are mounted on the terminal board in spaced apart relationship to each other and to the housing. An elongated ground strap is selectively mounted to one of the terminals in first and second positions. One end of the ground strap is squared off and the other end has an attachment foot. When the groud strap is in its first position its squared off end is in interferring relationship with the adjacent edge of the terminal board and its attachment foot is spaced on the housing a distance at least equal to the normal spacing between the adjacent terminals. When the ground strap is in its second predetermined position the attachment foot is in juxtaposition to one wall of the housing and is bolted to the wall of the housing to provide electrical connection between the ground strap and the housing.

3,760,315
ELECTRICAL COIL WITH SPACING BANDS

Hans Hartmann, Ennetbaden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 1, 1971, Ser. No. 203,602
Claims priority, application Switzerland, Dec. 7, 1970, 18117/70
Int. Cl. H01j 27/30
U.S. Cl. 336—205 **6 Claims**



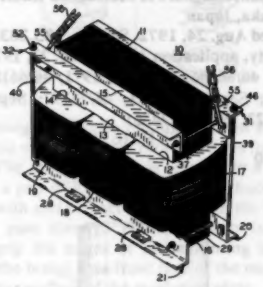
An electrical impedance coil which has a helical configuration has applied to the outer surface thereof a plurality of circumferentially spaced bands of insulating material and which extend longitudinally of the coil. A cord wrapping applied around the bands at the helical interspace formed between adjacent turns of the coil serves to draw in those portions of the bands into this interspace so as to lie between adjacent turns and the bands in conjunction with the binding-in effect produced by the cord wrapping serve to mechanically reinforce the coil against disruptive forces which occur when the coil is required to carry high currents.

A rotatable mandrel arrangement is provided in connection with manufacture of the coil, the mandrel serving to form the electrical conductor into helical form, and as a support for the supply rolls of the band material to be applied to the outer surface of the bands, after which the cord wrapping is applied as the mandrel is rotated.

3,760,316
TRANSFORMER CORE ASSEMBLY

Robert L. Czewski, and Robert S. Gross, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Feb. 5, 1973, Ser. No. 329,886
Int. Cl. H01f 27/26
U.S. Cl. 336—210 **6 Claims**



A transformer core assembly including a plurality of laminations of magnetic material which are releasably clamped together into a unitary structure. The core includes a number of leg sections which are joined together by a number of yoke sections. The leg and yoke sections are formed of stacked laminations of magnetic material Support bars are positioned against one edge of one yoke section and are slidable received in a pair of clamp members. The clamp members are positioned against opposite sides of the yoke section and are bolted together tp confine the yoke section therebetween. Another pair of clamp members bear against the sides of the other yoke section and are bolted together to clamp that yoke section therebetween. A J-bolt interconnects one corner of each of the first clamp members with a corresponding corner of each of the other pair of clamp members and each of the other clamp members is provided with an opening to receive lifting mechanism adjacent the J-bolt.

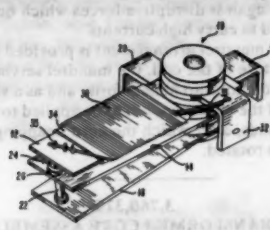
3,760,317
THERMALLY ACTUATED CONTROL DEVICE AND CIRCUIT

Robert Edward Mello, Rockville, and Armand Ciavatta, Meriden, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.

Filed Jan. 31, 1972, Ser. No. 221,887
Int. Cl. H01h 61/02
U.S. Cl. 337—103 **2 Claims**

A control device for setting the operating period for a motor useful in actuating a shoe buffer or similar appliance. The control device is a relay whose contacts are closed and opened as a consequence of the heating of a coil surrounding one of the bi-metallic strips of the relay. The relay is so constructed that closure of the aforesaid contacts occurs substantially instantaneously, that is, in an extremely short time period upon ap-

plication of current to the heating coil. Moreover, the relay is adapted to have the contacts return to the open state in a



much longer time period; such longer time period constituting the operating period for the apparatus to be controlled.

3,760,318

PROCESS FOR MAKING A VOLTAGE DEPENDENT RESISTOR

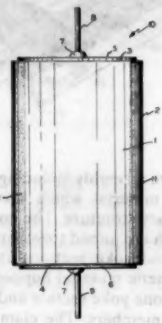
Takeshi Masuyama; Mikio Matsuura, and Atsushi Iga, all of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 24, 1972, Ser. No. 283,283

Claims priority, application Japan, Aug. 27, 1971, 46/66185; Aug. 27, 1971, 46/66186; Aug. 27, 1971, 46/66187; Aug. 27, 1971, 46/66188; Sept. 17, 1971, 46/72797; Sept. 17, 1971, 46/72798; Sept. 22, 1971, 46/74351

Int. Cl. H01c 7/10

U.S. Cl. 338—20 **12 Claims**



A voltage dependent resistor comprising a sintered body of zinc oxide having: (1). voltage dependent properties by itself, (2). at least one member selected from the group consisting of L: ions and Na ions diffused in the side surface thereof, and (3). Two electrodes applies to the opposite surfaces thereof. The invention also provides a process for making said resistor.

3,760,319

TEMPERATURE DETECTING WIRE STRUCTURE

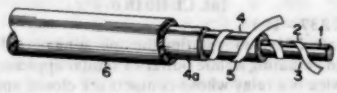
Toshinobu Kawazoe, 863-1 Shiro, Tokorozawa-shi, Saitama-ken, Japan

Division of Ser. No. 881,425, Dec. 2, 1969, Pat. No. 3,375,477. This application Mar. 14, 1972, Ser. No. 234,517

Claims priority, application Japan, Dec. 17, 1968, 43/92026; Jan. 21, 1969, 44/3815

Int. Cl. H01c 7/02

U.S. Cl. 338—26 **12 Claims**



Wire structures for detecting temperature rises above a predetermined level comprise a cylindrical core formed of non-conductive material, an electrically conductive first wire spirally wound around the core, a first thermosensitive layer coated on the first metal wire made of a mixture of resin binder and fine crystals of vanadium dioxide, an electrically conductive second wire spirally wound around the first thermosensitive layer, a second thermosensitive layer made of the same components as the first coated around the second metal wire and a coating of non-conductive resin covering the second thermosensitive layer. A method for making the temperature detecting wire structure is disclosed, such method being claimed in a divisional patent.

3,760,320

DEVICE FOR SIMULTANEOUSLY CONTROLLING A PLURALITY OF VARIABLE RESISTORS

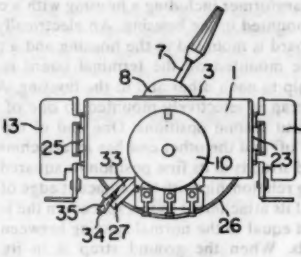
Shunzo Oka, Osaka, and Matsuo Nishioka, Nishinomiya-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan

Filed Mar. 21, 1972, Ser. No. 236,681

Claims priority, application Japan, Mar. 25, 1971, 46/21457; Mar. 25, 1971, 46/21458; Mar. 26, 1971, 46/22058; Mar. 26, 1971, 46/22059

Int. Cl. H01c 9/00

U.S. Cl. 338—128 **6 Claims**



A bearing having a spherical bearing surface and made of a synthetic resin by molding or the like is attached to an opening formed at the center of the top wall of a casing having four side walls. The bearing rotatably receives a spherical body having a control shaft which extends through the center of the spherical body and is securely fixed thereto. Variable resistors are attached to the side walls of the casing in such a manner that their rotary shafts may extend into the casing. Each of the opposed pairs of the variable resistors are interconnected with a bow-shaped elastic connecting member having an axially elongated slot. The lower end of the control shaft is fitted into the axially elongated slots of the connecting members which cross each other, but do not interfere with each other. As the control shaft is rotated or inclined in any direction, two or four variable resistors may be simultaneously controlled.

3,760,321

CONCENTRIC SHAFT ENCASED VARIABLE ELECTRONIC COMPONENT

John H. Fabricius, and John P. Maher, both of North Adams, Mass., assignors to Sprague Electric Co., North Adams, Mass.

Filed June 6, 1972, Ser. No. 260,293

Int. Cl. H01c 9/02

U.S. Cl. 338—134 **10 Claims**

Two variable circuits on opposing major surfaces of a ceramic substrate are disposed on concentric shafts that extend out from a preformed insulative casing that houses the circuits and effectively isolates all internal parts from external pressures and forces. The innermost shaft operates an "off-on" switch and the "loudness" control, while the outside shaft operates the tone control of the component and has a detent thereon for adjusting the component to its optimum setting.

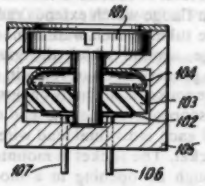
Both circuits are held stationary and are contacted by rotatable means, all of which are disposed within a preformed casing of insulative material that has terminals running from the circuits to outside the casing. A cover of insulative material is sealed to the casing that protects the component from dirt, dust and the like.

3,760,322

VARIABLE RESISTOR

Masanori Kogo, and Hisashi Honda, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 29, 1972, Ser. No. 267,630
Claims priority, application Japan, June 30, 1971, 46/48316
Int. Cl. H01c 9/02
U.S. Cl. 338—137 5 Claims



A resistive element has a gradient of resistivity extending along its length. It is held in slidable contact with two brushes spaced-apart from each other. The resistance between the brushes can be varied by changing their position relative to the resistive element and the gradient of resistivity. The resistive element may have an arcuate configuration and the relative position may be changed by rotating the element.

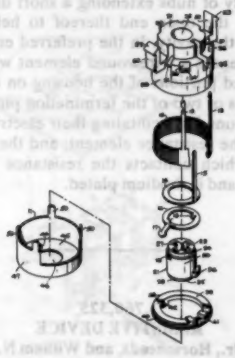
3,760,323

INSULATED WIRE WOUND RESISTOR

Burton S. Lifson, Rydal, Pa., assignor to Continental-Wirt Electronics Corporation, Warminster, Pa.

Filed Sept. 25, 1972, Ser. No. 291,658
Int. Cl. H01c 5/02
U.S. Cl. 338—174 9 Claims

A variable resistor which includes a one-piece molded plastic insulating housing having an open-ended hollow socket in which is disposed an assembly consisting of a wire wound annularly-shaped resistance element having terminal legs projecting directly through and outwardly of the insulating housing, and a pair of electrically interengaged metal rings mounted on a molded plastic rotor coaxially centered within said hollow socket, one of said rings having a contact finger engaging the resistance element and the other of said rings having a terminal lug extending through and outwardly of the molded plastic housing, all of the foregoing assembly parts being operatively held within the one-piece housing by a molded plastic insulator ring fitted in the open end of said hollow socket, and a retainer shell locked to and embracing said socket and its end closure ring to secure the entire assembly together. A detent projection from the retainer shell extends into the housing and in conjunction with an extension on the molded plastic rotor provides rotation stops for the rotor contact finger. The entire housing is secured to a mounting plate by means of a pair of locking arms having hooked ends which are integral with and project forward from the housing and are designed to pass through mounting slots in the mounting board and grip the edges of the mounting slots to thereby firmly press the broad area front face of the one-piece housing against the rear surface of the mounting plate.



3,760,324

SINGLE-TURN POTENTIOMETER

Kenneth B. Baldwin, Corona, and Ronald D. Sullivan, Riverside, both of Calif., assignors to Bowins, Inc., Riverside, Calif.

Filed Sept. 26, 1972, Ser. No. 292,353
Int. Cl. H01c 5/02
U.S. Cl. 338—174 10 Claims

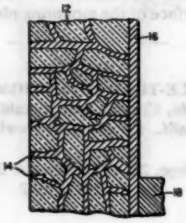
A potentiometer comprised of an electrically insulative housing of thermoplastic material having a deep, substantially

cylindrical cavity therein, a plurality of termination pins partially molded into the bottom of the housing, a substantially annular resistance element secured at the bottom of the housing and having the ends thereof attached to the heads of two of the termination pins, a disk-shaped cover member adapted to fit into the open end of the cavity, a resilient contact member attached to the underside of the cover and adapted to contact the resistance element and a third one of the termination pins, and an annular sealing member positioned between the cover member and a ledge on the housing. The housing member includes a plurality of nubs extending a short distance into the cavity adjacent the open end thereof to help retain cover member within the cavity. In the preferred embodiment, the resistance element is a wirewound element which is heat inserted into raised portions of the housing on the floor of the cavity; the heads of two of the termination pins include small integral projections for facilitating their electrical connection to the ends of the resistance element; and the tip of the contact member which contacts the resistance element has a knurled surface and is rhodium plated.

3,760,325
RESISTIVE DEVICE

Ray B. Forker, Jr., Horseheads, and William N. Lawless, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,463
Int. Cl. H01c 7/02
U.S. Cl. 338—262 **10 Claims**



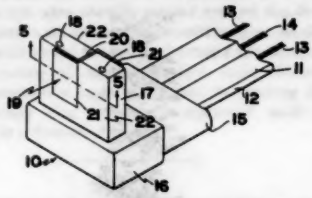
A resistive device formed of a porous glass matrix member. Amorphous carbon is formed in situ in an electrically continuous manner within the pores of said matrix member. The member has two terminal ends to which means are electrically connected for making external electrical connection to the device. The resistance of the device is a determinable and measurable function of temperature and the device is useful for measuring temperatures from the cryogenic region to in excess of room temperature since the resistance of the device varies smoothly over such range and the device possesses high sensitivity in such a temperature range.

3,760,326
THREE WIRE ELECTRICAL PLUG

Lynne E. Windsor, Winnipeg, Manitoba, Canada, assignor to James B. Carter Limited, Winnipeg, Manitoba, Canada

Division of Ser. No. 825,208, May 16, 1969, Pat. No. 3,606,155. This application May 3, 1971, Ser. No. 139,816
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R **2 Claims**

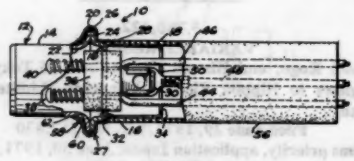
An electrical plug with a ground wire connected to an angulated grounding strip moulded into the plug body between the two contacts and extending on each side of the body so that it grounds to the shroud normally shielding the pins of the heater and into which the plug normally engages.



3,760,327
MOUNTING AND SEALING ARRANGEMENT FOR LAMP SOCKETS

George B. Whitehead, Birmingham, Mich., assignor to Elmatic Corporation, Livonia, Mich.

Filed Dec. 8, 1971, Ser. No. 205,904
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R **31 Claims**



A circular plastisol sealing gasket surrounds the metal lamp socket and forms a fillet between the tubular wall of the socket shell and a circular flange which extends radially outwardly of the shell wall. The tubular shell wall immediately forward of the circular flange, around which the gasket is formed, is dimensioned for a press fit in an opening in a mounting panel. The rear end of the socket is sealingly enclosed by a protective boot which is telescoped over the rear end of the socket shell and sealed around each individual lead wire which exits from the rear of the socket. The socket is mounted by inserting its forward end through an opening in a mounting panel and pressing the socket into the panel so that the press fit portion of the shell wall is retained therein. The plastisol gasket deforms to form a waterproof seal between the socket and the mounting panel.

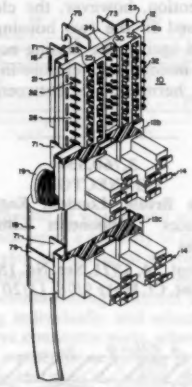
3,760,328
TELEPHONE TYPE ELECTRICAL CONNECTORS

Thomas Georgopulos, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 19, 1972, Ser. No. 245,461
Int. Cl. H01r 9/08, 13/50, 29/00
U.S. Cl. 339—18 R **15 Claims**

An electrical connector body for use with a main distributing frame of a telephone central office including a generally elongated flat rectangular panel having front face and rear surfaces, a plurality of socket type apertures in the panel face in which to mount pluggable circuit protector modules, a first set of pin terminals extending at once both outwardly from and axially along a central portion of the panel face, and a second set of pin terminals extending at once both outwardly from and axially along the two opposite longitudinal edge portions of the panel face. The socket type apertures are disposed intermediately of the central first set of pin terminals and both longitudinal edge second set of pin terminals, respectively.

The apertures are geometrically arranged with respect to each other and with respect to the first and second sets of pin terminals, so as to provide a readily ascertainable geometrical pattern of association between selected ones of the first and second sets of pin terminals and a selected aperture. Further,



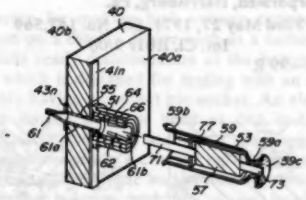
the first and second sets of pin terminals are continuous in their respective length dimensions to extend into the associated apertures to provide terminal means within the apertures whereby the protector modules are connectible to said first and second sets of pin terminals.

3,760,329

MATED CONNECTOR APPARATUS FOR PRINTED WIRING BOARDS

William E. Stepan, Brookfield, Ill., assignor to GTL Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 3, 1972, Ser. No. 277,712
Int. Cl. H01r *29/00*
U.S. Cl. 339—18 C **10 Claims**



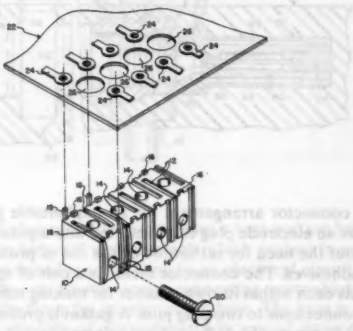
A single thickness double-sided pinboard card substrate such as a printed wiring board utilizes novel mated connector apparatus to interconnect circuit paths through pre-drilled openings through the board. The mated connector apparatus are miniaturized and are programmable to permit a desired selection of electrical connections. The mated connector apparatus are comprised of socket means pluggably mounted within the apertures and pluggable connectors means then to be removably mounted within the socket means. The pluggable connector means are useful for mounting discrete electrical components therein for interconnection between the oppositely disposed circuit paths.

3,760,330

INSULATED COMMON STRIP

Joseph C. Bennett, Lisle, and Anton Wenzel, Villa Park, both of Ill., assignors to GTE Automatic Electric Laboratories Inc., Northlake, Ill.
Automatic Electric Laboratories Inc., Northlake, Ill.

Filed Mar. 31, 1972, Ser. No. 239,983
Int. Cl. H01r *9/00, 29/00*
U.S. Cl. 339—18 R **8 Claims**



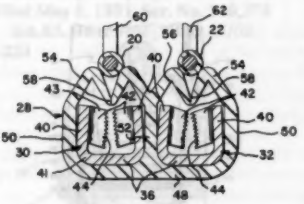
An insulated common strip for selectively coupling electrical components to the circuits of a printed wiring card. A self-tapping screw is used to close an electrical path between first and second pretensioned spring conductors mounted on an insulating block and coupled to the printed circuits.

3,760,331

ELECTRICAL CONNECTING DEVICE FOR INSULATED WIRES

Grey Manning Gurley, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 807,300, March 14, 1969, Pat. No. 3,593,403. This application July 16, 1971, Ser. No. 163,200
Int. Cl. H01r *13/44, 9/08*
U.S. Cl. 339—36 **5 Claims**

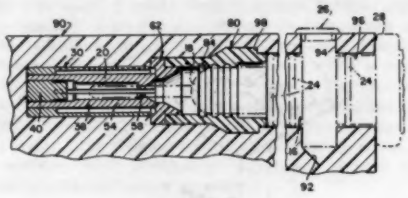


Insulated electrical connector comprises a metallic connecting device having opposed U-shaped sections integral with each other. The opposed edges of the U-shaped sections comprise wire receiving slots. The metallic connecting device is contained in a plastic housing open at one end and having an axial slit in alignment with the slots. An electrical and mechanical connection to a wire is made by passing the wire laterally of its axis through the slit and inserting the wire into the slots.

3,760,332
PACER CONNECTOR

Barouh V. Berkovits, Newton Highlands; Pieter J. Denouter, Marlboro, and Edward L. Lewis, Sharon, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Mar. 9, 1972, Ser. No. 233,069
Int. Cl. H01r 13/62
U.S. Cl. 339—66 R 9 Claims

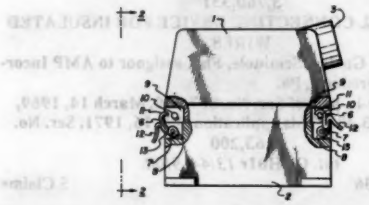


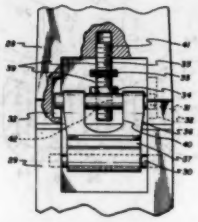
A connector arrangement for an implantable pacer which allows an electrode plug to be inserted into a pacer receptacle without the need for set screws or the use of protective medical adhesives. The connector includes a pair of spring-loaded collets each within its own retainer for making reliable electrical connections to two plug pins. A gasket is provided for each collet to prevent body fluids from gaining access to it.

3,760,333
ELECTRIC PLUG CONNECTION

Alfred Otto H. Stieler, Heilbronn, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed June 7, 1971, Ser. No. 150,406
Claims priority, application Germany, July 21, 1970, P 20 36 207.6
Int. Cl. H01r 13/54
U.S. Cl. 339—91 R 4 Claims



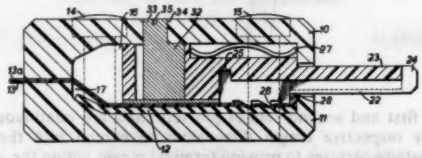


This invention relates to an electric plug connection with a hermetically sealed housing having a housing base member and a housing cover member, each of the members containing one of a pair of mating electric plug connectors. The invention encompasses a closure which, in a closed position elastically urges the two housing members together in a sealing relationship. The closure is in the form of a plate pivotally mounted on a shaft in the base housing member and is rotatable thereon until the rounded end portion of the closure is elastically secured to a shaft in the cover housing member. The closure has a gripping tongue which extends substantially perpendicular to the plane of the closure to provide ready access to the closure member for manipulation by an operator. In alternative forms of the invention, the closure may be adjustable in grip length or the distance between the shafts secured by the closure may be adjustable. In all of the embodiments of the invention, however, the closure cooperating with shafts disposed in the two housing members holds the shaft members against the biasing action of a resilient means in order to maintain the closure in a closed position and to maintain a hermetic seal between the two housing members.

3,760,334
CONNECTORS

Kenneth Frederick Bridle, London, England, assignor to A. B. Electronics Components Limited, Abercynon, Glamorgan, Wales

Filed Sept. 24, 1971, Ser. No. 183,415
Int. Cl. H01r 9/08, 11/20
U.S. Cl. 339—99 R 11 Claims

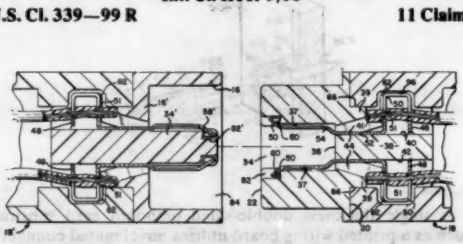


An electrical connector for a tape cable which consists of metallic tapes embedded side-by-side in an insulating medium, the connector consisting of a housing into which the tape cable extends and between two parts of which the tape cable is clamped. The housing contains a contact carrier carrying a number of electrical contacts each of which has teeth for engagement with one of the metallic tapes of the cable. The contact carrier is movable longitudinally within the housing, there being an eccentric mounted in the housing for moving the carrier so that the teeth plough into the cable to make electrical contact with the tape.

3,760,335
PRE-LOADED ELECTRIC CONNECTOR

Lincoln Edwin Roberts, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 27, 1971, Ser. No. 147,569
Int. Cl. H01r 9/08
U.S. Cl. 339—99 R 11 Claims



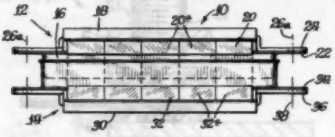
Multi-contact electrical connector comprises an insulating body having a plurality of electrical contact terminals therein. The rearward ends of the terminals are provided with slotted plate-type contact means which are adapted to receive insulated wires to form electrical and mechanical connections between the terminals and the wires. The arrangement of the contact terminals in the connector housing is such that a plurality of wires can be connected to the individual terminals in a single operation so that the connector can be quickly applied to the end of a multi-conductor cable at a work site.

3,760,336

MINIATURE CONNECTOR-MODULAR

James Joseph Cerwin, Oak Park, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Mar. 24, 1971, Ser. No. 127,609
Int. Cl. H01r 13/54
U.S. Cl. 339—92 M 4 Claims



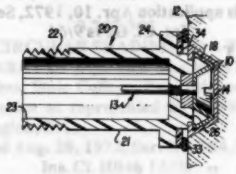
A miniature connector of which each main part includes a dielectric insert made up of a plurality of modules in the form of blocks, each having an individual arrangement for mounting pin contacts and socket contacts, respectively, the different modules accommodating different sized contacts and the modules being individually and selectively positionable within the respective connector parts, whereby to enable special make-up of a connector according to specific local and immediate requirements as to the size or other characteristics of the contacts.

3,760,337

CONNECTOR FOR DISPLAY TUBE ANODE BUTTON

Erlon Fitch Johnson, Elizabethtown, Pa., assignor to Amp Incorporated, Harrisburg, Pa.

Filed May 24, 1972, Ser. No. 256,230
Int. Cl. H01r 13/52
U.S. Cl. 339—94 R 8 Claims



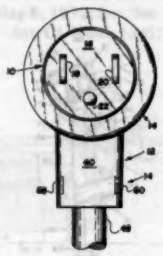
A connector for making high voltage connection to an anode button on a display device such as a cathode ray tube which permits ready disconnection at the button features a receptacle which is designed for mating with an appropriate lead assembly having a contact pin socket. An elongate male contact pin having a screw head at one end and being threaded adjacent the same end has a snap-in piece having spring fingers arranged in a circular pattern for engaging the interior portion of the anode button fixedly positioned on the pin in abutting relation with the screw head by a nut threadably engaging the threaded portion of the pin. A receptacle has an externally threaded tubular end portion and a reduced axial opening in one end which is internally threaded for receiving the contact pin in threaded engagement so that the pin end extends into the tubular portion for engagement with the pin socket of the mating piece, and the screw head and spring fingers are positioned outside the receptacle for being engaged with the anode button so that by tightening the receptacle on the threaded contact pin, the spring fingers are forced into positive locking engagement with the button. A wide circumferential flange on the receptacle compresses an O-ring sealing member against the glass surface of the display tube about the anode button upon tightening of the receptacle on the threaded contact pin.

3,760,338

TERMINAL PLUG CONSTRUCTION

John F. Bruels, Danielson, Conn., assignor to Basic Electronics, Inc., Danielson, Conn.

Filed Apr. 10, 1972, Ser. No. 242,687
Int. Cl. H01r 33/04, 33/72
U.S. Cl. 339—196 M 3 Claims



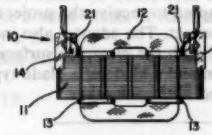
A terminal plug construction includes a base portion having three separate terminal male contacts which project from the bottom of the base for connection to an electrical circuit and which includes an interior screw connecting post which extends upwardly from the interior of the base. The base is provided with a plurality of circumferentially spaced projections which engage with a complementary number of recesses defined around a ring portion of an intermediate member which fits over the base member. The intermediate member is shaped so it may interengage with the base member in a selected one of a plurality of orientations depending on which of the recesses are engaged over the circumferentially spaced projections on the base. The orientation of the intermediate member is chosen to affect the desired angular projection of a cable receiving trough formed as a radial extension of the circumference of the ring portion of the intermediate member. The cover member includes a cylindrical portion which overlies and covers both the intermediate member ring portion and the portion of the base and it also includes an outwardly extending portion which is oriented over the trough of the intermediate member and which provides a cover for the connecting cable. The complete assembly is held in position by a single bolt or screw which is directed through a central opening in the top member and through the threaded connection of the screw connecting post member.

3,760,339

CONNECTOR FOR PLUG IN FIELD

James W. Marshall, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed May 5, 1971, Ser. No. 140,375
Int. Cl. H01r 9/08; H02g 15/08
U.S. Cl. 339—221 4 Claims



A terminal is provided for use in interconnecting the magnet wire of a field coil of an electric motor to another circuit element such as a lead wire. The terminal is insulatively mounted on the field core, preferably before winding the coils. The terminal includes a channel part adapted to be crimped to the magnet wire and a socket part adapted to receive the circuit element.

3,760,340
CIRCUIT BOARD SOCKET

Lindsay C. Friend, Camp Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

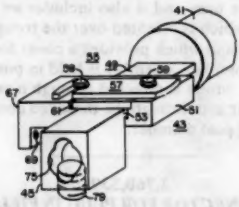
Filed Oct. 29, 1971, Ser. No. 193,913
Int. Cl. H01r 13/06
U.S. Cl. 339—262 R 18 Claims

An electrical disconnect socket comprising a forked body having a spring clip wrapped around the fork prongs. The clip includes a pair of spring arms extending into the space between the prongs for forming an electrical connection with a lead inserted into the socket.

3,760,341
CONNECTING ADAPTER FOR ELECTRIC CABLE AND FUSE

John E. Grad, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1972, Ser. No. 228,134
Int. Cl. H01r 7/26, 7/12
U.S. Cl. 339—265 F 2 Claims



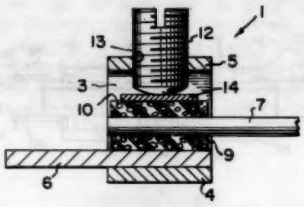
An adapter for connecting an electric cable to a blade-type fuse characterized by two metal bodies, one of the bodies having a cable-receiving aperture and having a projecting portion extending from one side thereof, and the other body having a clamping surface adapted to receive the projecting portion in surface-to-surface contact. The adapter also includes clamping means associated with the clamping surface for retaining the projecting portion and a blade of a blade-type fuse in surface-to-surface contact with each other.

3,760,342
TERMINAL CONSTRUCTION FOR ELECTRICAL CONDUCTORS

Robert E. Prouty, and Herman G. Bear, both of Logansport, Ind., assignors to Essex International, Inc., Ft. Wayne, Ind.

Filed Sept. 17, 1971, Ser. No. 181,357
Int. Cl. H01r 11/10
U.S. Cl. 339—272 R 14 Claims

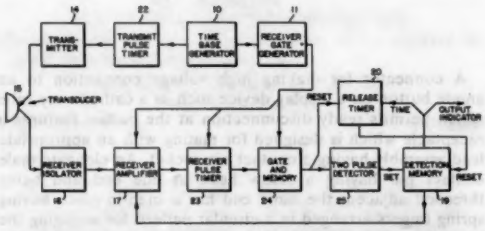
A terminal for coupling electrical conductors formed of different materials and arranged in confronting, overlapping relation comprises a body formed of elastomeric, non-conductive material encircling at least one of the conductors and bearing against another of the conductors, the body containing a plurality of discrete, electrically conductive particles responsive to compression of the body to establish an electrically conductive path between the conductors. Force applying means acts on the body via a force distributing member which overlies a substantial portion of the length of the body so as to apply sufficient compressive force to the body to render the latter conductive.



3,760,343
APPARATUS FOR CONTROLLING SONIC ENERGY DISTRIBUTION

John H. Auer, Jr., Fairport, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Division of Ser. No. 867,621, Oct. 20, 1969, Pat. No. 3,672,462. This application Apr. 10, 1972, Ser. No. 242,854
Int. Cl. G01s 9/66
U.S. Cl. 340—1 T 6 Claims

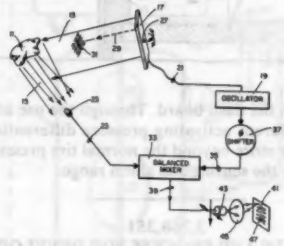


A vehicle presence detection system for detecting the presence of vehicles preceding along a roadway. A transmitter produces periodic pulses of sonic frequency. A transducer emits the sonic energy pulses, receives reflected sonic energy from the vehicles and generates electrical signals corresponding to such received energy. A wave guide is interposed at the output of the transducer for setting up substantially a line source of sonic energy providing an operating elliptical pattern of a minimum intensity over the roadway. Detection circuitry is actuated to manifest the distinctive indication of vehicle presence.

3,760,344
SCANNED HOLOGRAPHY WITH A ROTATING EXTENDED SOURCE

Bernard P. Hildebrand, Vancouver, British Columbia, Canada, assignor to Batelle Development Corporation, Richland, Wash.

Filed July 28, 1971, Ser. No. 166,944
Int. Cl. G01s 9/66; G02b 27/00
U.S. Cl. 340—5 H 6 Claims

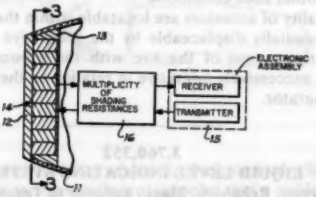


Either a planar or a spherical source of coherent radiation is rotated to scan its generated beam across an object scene. A substantially point radiation receiver is positioned to detect the object illuminating radiation after modification by the object. The receiver generates an electronic signal used in the construction of the hologram from which a three-dimensional image of the object scene may be reconstructed.

3,760,345
ADAPTING CIRCULAR SHADING TO A TRUNCATED ARRAY OF SQUARE ELEMENTS

William J. Hughes, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1972, Ser. No. 284,300
Int. Cl. H04b 13/00
U.S. Cl. 340—6 S 6 Claims

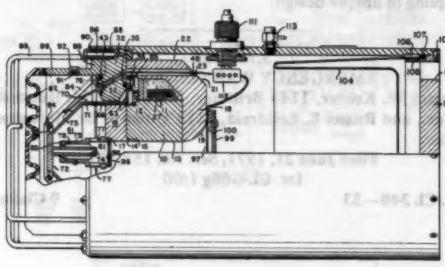


A circularly housed transducer transmitting and/or receiving array of square transducer elements is so shaded as to produce patterns equivalent to a transducer composed of a superpositioned set of concentric disk elements of consecutively smaller radii from the largest disk to produce stepwise shading thereby truncating a square array to maximize the radiating area and minimize the beamwidth with low side lobes.

3,760,346
HIGH-POWER UNDERWATER ELECTROACOUSTIC TRANSDUCER FOR THE INFRASONIC AND LOW AUDIO-FREQUENCY RANGE

Robert J. Kieser; John R. Bass, and John E. Donovan, all of Orlando, Fla., assignors to the United States of America as represented by the Secretary of the Navy

Filed May 8, 1972, Ser. No. 251,410
Int. Cl. H04b 13/02
U.S. Cl. 340—8 R 2 Claims

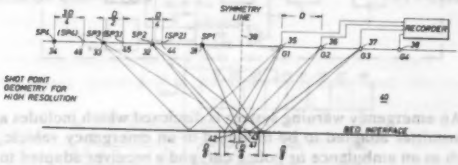


This disclosure is directed to a high power underwater electro-acoustic transducer operable in the infrasonic and low audio-frequency range.

3,760,347
HIGH RESOLUTION REFLECTION SHOOTING

James Alva Treybig, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 16, 1971, Ser. No. 153,554
Int. Cl. G01v 1/20
U.S. Cl. 340—15.5 MC 13 Claims

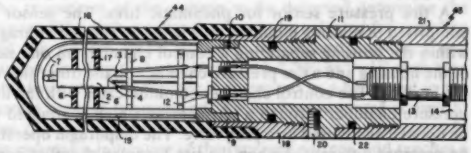


An illustrative embodiment of the invention includes methods for obtaining seismic data from closely spaced subsurface reflection points using a minimal number of seismic energy generations. The invention includes methods of shot point and seismometer spacing which may be varied in a systematic manner to produce reflection from close, but assuredly not the same, subsurface bed interface areas.

3,760,348
H52 STANDARD REFERENCE HYDROPHONE

Robert J. Kieser; Allan C. Tims, both of Orlando, Fla., assignors to the United States of America as represented by the Secretary of the Navy

Filed Feb. 24, 1972, Ser. No. 228,833
Int. Cl. H04b 13/02
U.S. Cl. 340—10 6 Claims



An electroacoustic transducer with features permitting a structure of minimum size to thereby permit reflection and ab-

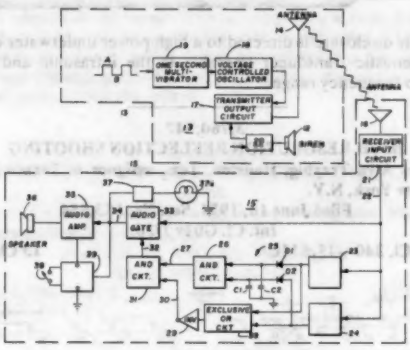
sorption measurement to be made over a broad band of frequencies without disturbing the sound field. A plurality of lithium sulfate crystals are bonded to gold plated silver foil electrodes with an isolating space being provided between each adjacent pair of crystals. The crystal assembly is supported by compliant members within a wire frame which is surrounded by an expanded metal electrostatic shield. The whole assembly is enclosed within a castor oil filled butyl boot. Output terminals are connected through a hermetic-seal-through to a conventional preamplifier. Cable connections to the preamplifier are made through a pressure resistance coupling of unique design.

3,760,349

EMERGENCY WARNING SYSTEM

Douglas W. Keister, 1143 Brittmor, Rt. 8 Box 674, Houston, Tex., and Russel B. Leibfreid, 2113 Potomac Dr., Houston, Tex.

Filed June 21, 1971, Ser. No. 155,117
Int. Cl. G08g *1/00*
U.S. Cl. 340—33 **9 Claims**



An emergency warning system is disclosed which includes a transmitter adapted to be mounted in an emergency vehicle, such as an ambulance or police car, and a receiver adapted to be mounted in another vehicle such as a private automobile. The transmitter emits coded signals in response to actuation of the vehicle's siren or other emergency device, and the receiver responds to receipt of only the coded transmitted signals when the emergency vehicle and another vehicle are in close proximity to provide visual or audio signals to the driver of another vehicle to warn him of the proximity of the emergency vehicle. A switch is provided in the receiver to override the audio warning signal received by the driver of another vehicle, and the switch is automatically reset by loss or reduction of signal from the transmitter of the emergency vehicle.

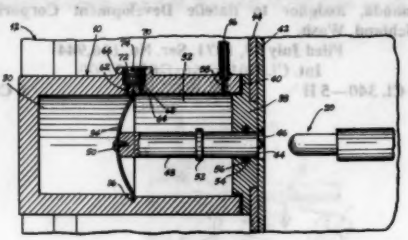
3,760,350

PNEUMATIC TIRE PRESSURE SENSOR

Eugene L. Johnson, Box 387, Holt Summit, Mo.

Filed Mar. 27, 1972, Ser. No. 238,561
Int. Cl. B60c *23/00*
U.S. Cl. 340—58 **5 Claims**

A tire pressure sensor for pneumatic tires. The sensor is comprised of housing mounted on a wheel having a diaphragm within the housing separating a control chamber on one side of the housing and a tire pressure chamber on the other side of the housing. The control chamber communicates with the tire pressure chamber through a passageway which is adapted to be opened and closed by a plug valve. The diaphragm operates on pressure differential when the tire pressure chamber communicating through a sensing tube at the interior of the tire falls below the pressure in the control chamber causing the movement of the diaphragm and a plunger connected to it. The plunger upon activation of the diaphragm makes contact with a circuit on the back plate of the wheel to energize a



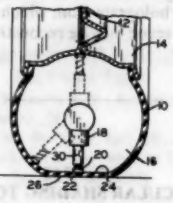
warning light on the dash board. Through the use of different diaphragms, different activating pressure differentials of two to ten pounds or more beyond the normal tire pressure can be provided to vary the sensing and alarm range.

3,760,351

APPARATUS AND PROCESS FOR DEVELOPING ELECTROMAGNETIC ENERGY FROM TIRE FLEXURE

Stephen Edward Thomas, 13664 Ronnie Way, Saratoga, Calif.

Filed July 2, 1971, Ser. No. 159,272
Int. Cl. B60c *23/06*
U.S. Cl. 340—58 **3 Claims**



Mounted within a flexible pneumatic tire is an actuator which is reciprocated radially by the normal distortion of the tire as it moves into ground-engagement, is depressed and then expands to its original position as it moves out of ground-engagement. The periodic engagement and disengagement produces a radially reciprocable movement which is used to operate an electromagnetic generator, and the energy derived from the generator is usable either for operating an electrically operable device, or the signal may be monitored to indicate tire parameter conditions such as heat, inflation pressure and other such conditions.

A plurality of actuators are locatable within the tire each of which is radially displaceable by the successive engagement and disengagement of the tire with the ground, and each device is successively operative in relation to the electromagnetic generator.

3,760,352

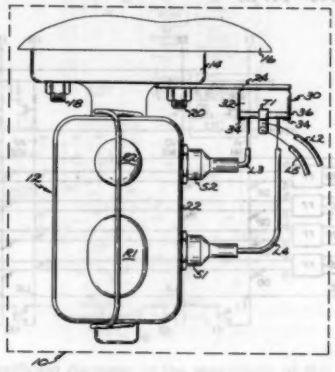
LIQUID LEVEL INDICATING SYSTEM

Leo Marcoux, Rehoboth, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 6, 1971, Ser. No. 159,894
Int. Cl. G08b *21/00*
U.S. Cl. 340—59 **13 Claims**

One or more liquid level sensors in the form of positive temperature coefficient (PTC) of resistivity elements suspended in probes are mounted in a fluid reservoir. The elements, electrically connected in a circuit, are either in a low or high resistance mode. When the elements are in a low resistance mode sufficient current passes through respective heaters to

cause respective heat responsive, normally closed, switches connected to a liquid level indicator, to open. Initially upon energization of the system, the PTC elements are in the low resistance mode and the indicator is actuated until the switches receive sufficient heat to cause them to open. The PTC elements remain in the low resistance mode as long as the liquid level remains above the elements permitting heat generated in



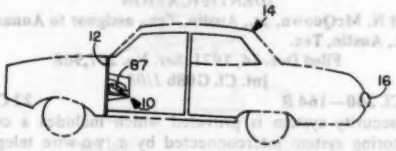
the elements to be dissipated; however, if the liquid level recedes sufficiently to expose the elements their temperature will rise until an anomaly point is reached beyond which resistance rapidly increases shutting off current to the heaters, permitting reclosing of the switches and reactuation of the indicator. The invention is particularly suited for use with a master cylinder of a vehicle as an indicator of an insufficient quantity of brake fluid in the braking system.

3,760,353

EMERGENCY VEHICULAR WARNING SYSTEM

Donald F. Hassinger, Ann Arbor, Mich., assignor to DV Displays Corporation, Cleveland, Ohio

Filed Oct. 18, 1971, Ser. No. 190,093
Int. Cl. B60q 1/44
U.S. Cl. 340—72 **4 Claims**



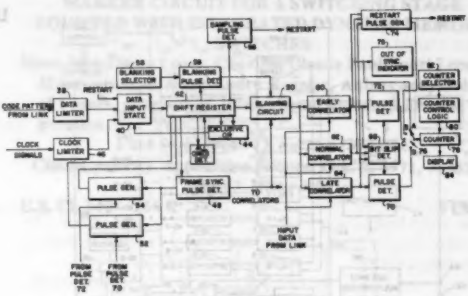
An emergency warning device for flashing brake lights on a motor vehicle to signal adjacent vehicles that a sudden stop is being made or has been made. The device provides means for setting a predetermined deceleration rate to which the device reponds. A mercury switch closes when the predetermined deceleration is exceeded. The device utilizes a solid state switch sensor attached to the mercury switch which activates a flasher when the predetermined deceleration is achieved and maintains the flasher activated after the predetermined deceleration has subsided. A manual reset switch is provided to extinguish the solid state switch sensor when the emergency condition has passed.

3,760,354

ERROR RATE DETECTION SYSTEM

David W. Ginn, Newtown, Conn., assignor to Data-Control Systems, Inc., Danbury, Conn.

Filed July 23, 1971, Ser. No. 165,077
Int. Cl. G08c 25/00; H04l 7/08
U.S. Cl. 340—146.1 E **10 Claims**



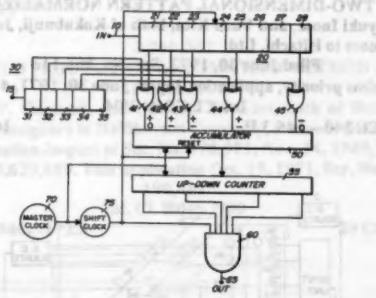
A system for determining the error rate of a data communications link in which a locally generated code is synchronized to a pseudo-random code transmitted over the link and compared therewith to ascertain errors.

3,760,355

DIGITAL PATTERN DETECTOR

Eugene J. Bruckert, Plantation, Fla., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 8, 1972, Ser. No. 232,884
Int. Cl. G06f 7/02
U.S. Cl. 340—146.2 **17 Claims**

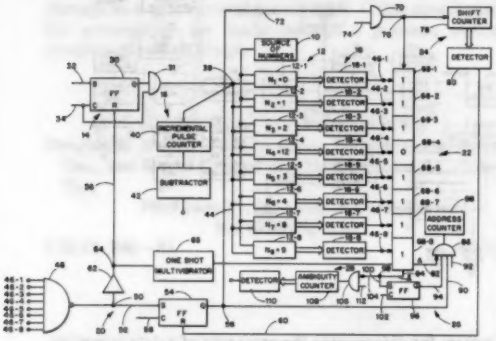


A detector for detecting a predetermined digital pattern having a predetermined number of bits employing a shift register having one stage more than the number of bits making up the predetermined digital pattern to serially receive the pattern. The first, last and selected intermediate stages of the shift register are sampled and compared with the contents of a second register having a predetermined pattern stored therein. The transitions of the pattern to be detected determine the stages of the shift register that are to be selected for sampling and the pattern to be stored in the second register. Comparison circuitry that provides a "+1," "0" or "−1" each time a bit from the shift register is compared to a bit stored in the second register is employed. An up-down counter is used to sum the signals from the comparison circuitry. The count in the counter is indicative of the received pattern, and reaches a predetermined value only upon receipt of the predetermined pattern.

3,760,356
TECHNIQUE FOR DETERMINING THE EXTREME BINARY NUMBER FROM A SET OF BINARY NUMBERS

Keshava Srivastava, Oklahoma City, Okla., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 17, 1971, Ser. No. 209,051
Int. Cl. G06k 9/00; G06f 7/38
U.S. Cl. 340—146.3 Y 7 Claims

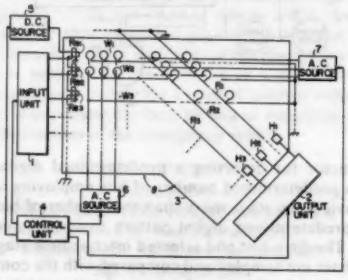


A technique is disclosed wherein the extreme number from a set of binary numbers is determined. Each number of the set is augmented until one number from the set reaches a predetermined amount. Detector logic associated with the one number is enabled resulting in operations which identify both the extreme number and its address in the set. Also determined is the original value of the extreme number. Further enhancements to the technique of the invention include identification of the next extreme number and the difference between the extreme number and the next extreme number.

3,760,357
TWO-DIMENSIONAL PATTERN NORMALIZER

Fumiyuki Inose, and Yuzo Kita, both of Kokubunji, Japan, assignors to Hitachi, Ltd

Filed June 30, 1972, Ser. No. 268,113
Claims priority, application Japan, June 30, 1971, 46/47212
Int. Cl. G06k 9/04
U.S. Cl. 340—146.3 H 16 Claims

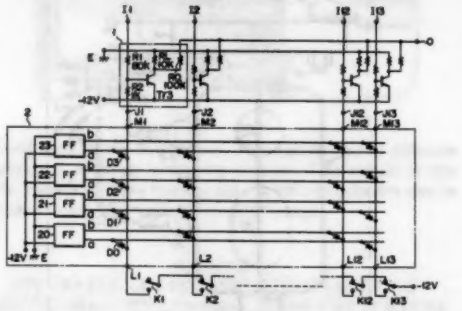


A two-dimensional pattern normalizer includes a first and a second shift register array disposed on a substrate of magnetic material, such as orthoferrite, said first array being disposed at a desired angle with respect to said second array; wherein an input pattern provided as a parallel bit train is written in said first shift register array and said pattern is read out through said second shift register array, and thus an output pattern rotated at the desired angle with respect to the input pattern is produced.

3,760,358
LATCHING SELECTOR FOR SELECTIVELY DRAWING OUT A SINGLE SIGNAL FROM AMONG A PLURALITY THEREOF

Sigeki Isii, Hamamatsu, and Yasuji Uchiyama, Hanakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Aug. 8, 1972, Ser. No. 278,824
Int. Cl. H04q 3/00
U.S. Cl. 340—147 LP 8 Claims



A latching selector comprises a plurality of switching circuits each switching an assigned signal, a memory circuit including bistable circuits and controlling the respective switching circuits, and the same plurality of key switches triggering the memory circuit. The switching circuits have respective signal input terminals supplied with respective assigned signals, respective control terminals and a common signal output terminal. The memory circuit includes memory output terminals respectively connected to the control terminals, memory input terminals respectively connected to the key switches, a number of bistable circuits equal to the digit number sufficient for binary notation of the plurality number, and a coding and encoding matrix connecting the memory input and output terminals to the bistable circuits in binary relation. When a key switch is actuated, the bistable circuits memorize in binary notation which key switch has been actuated, and in turn keep the corresponding switching circuit to conduct the assigned signal to signal output terminal until another key switch is next actuated.

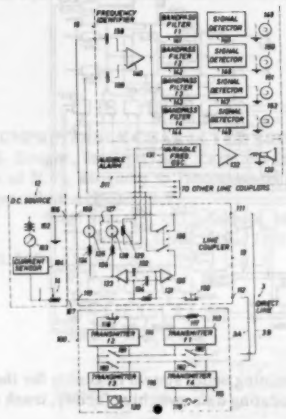
3,760,359
SECURITY SIGNALLING WITH ALARM IDENTIFICATION

Albert N. McQuown, Jr., Austin, Tex., assignor to Annandale, Inc., Austin, Tex.

Filed Dec. 14, 1971, Ser. No. 207,908
Int. Cl. G08b 1/08
U.S. Cl. 340—164 R 22 Claims

A security system is provided which includes a central monitoring system interconnected by a two-wire telephone circuit to one or more protection loops, each being composed of one or more series-connected reporting devices or stations. A DC power supply is located in the control station for generating a supervisory current flow between the control station and the protection loop, and each reporting device is composed of a signal generator in parallel with a low resistance shunt arranged to be broken by the detected occurrence of an event sought to be observed. Detection of the event interrupts the shunt to route the supervisory current through its associated signal generator, thereby developing a voltage greater than a predetermined value. The associated signal generator is then activated by the flow of supervisory power, whereby a signal current of preselected character is superimposed on the supervisory current. The control station registers the occurrence of the event by noting the presence of

the superimposed signal current, and identifies the particular detector circuit by identifying the preselected characteristic of the signal being generated. Additionally, the routing of the supervisory current through the signal generator may be made to



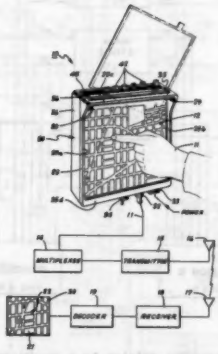
cause a significant decrease in the magnitude of this current. Concurrent registration of the occurrence of an event or the indication of a line fault may be noted at the control station by sensing the magnitude of the supervisory current and responding to a change of predetermined amount.

3,760,360

MATRIX SWITCH

Robert S. Reynolds, Cupertino, and Svein T. Nordberg, Saratoga, both of Calif., assignors to E-Systems Incorporated, Dallas, Tex.

Filed Nov. 1, 1971, Ser. No. 194,261
Int. Cl. H04q *9/10*; G08b *5/00*; G08g *1/12*
U.S. Cl. 340—166 R **9 Claims**



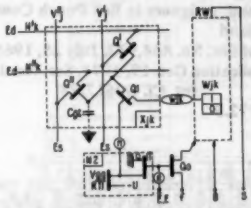
A finger-pressure actuated matrix switch assembly includes a map overlay and generates a binary coded signal corresponding to the coordinates of the point of application of pressure to the map. The assembly comprises a housing with a slot for positioning a replaceable map card in operative position and a storage chamber for a plurality of such map cards. Each of the map cards is edge-notched with a unique code identifying that card, and switches supported on the housing are actuated by these notches when a map card is inserted into its operative position to generate a binary electrical signal corresponding to that code. The matrix or grid is formed by orthogonally related sets of printed conductors on stacked boards spaced apart by resilient strip separators formed directly on one of the boards. Logic circuitry for converting the coordinates of contacting conductors into binary digits is carried on a single pluggable board detachably connected to the matrix boards for quick replacement to facilitate maintenance and repair.

3,760,361

MARKER CIRCUIT FOR A SWITCHING STAGE EQUIPPED WITH INTEGRATED DYNAMIC MEMORY SWITCHES

Marc Jean Pierre Leger, Chaville; Claude Paul Henri Lerouge, Maurepas, and Marc Andre Regnier, Aulnay-sous-Bois, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,356
Claims priority, application France, Oct. 8, 1971, 7136232
Int. Cl. H04q *3/00*
U.S. Cl. 340—166 R **5 Claims**



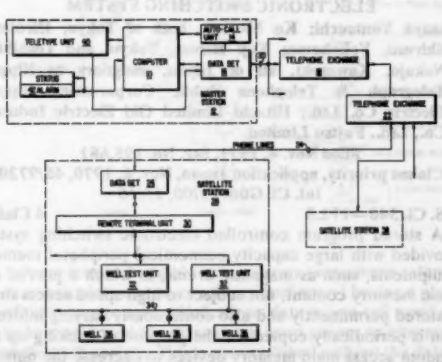
Disclosed is a marker for controlling an electronic switching stage. Each crosspoint of the stage includes a holding flip-flop which is used by the marker in its path search, the holding flip flops being combined into a shift register. The contents of the shift register can be read without disturbing the condition of the associated crosspoints. A path search comprises the steps of a read-out of the crosspoint conditions followed by analysis of the available sections through which a path can be completed. A second read-out of the shift register is made during which the flip-flops are set to close the crosspoints of a switching path.

3,760,362

OIL FIELD PRODUCTION AUTOMATION METHOD AND APPARATUS

George V. Copland, and Edward W. Gass, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 876,911, Nov. 14, 1969, Pat. No. 3,629,859. This application Oct. 19, 1971, Ser. No. 190,481
Int. Cl. H04b *3/00*
U.S. Cl. 340—172.5 **29 Claims**



A system for monitoring the fluid production at a producing oil well. At the central station, a computer is connected

through commercial telephone lines to the producing oil well sites which are referred to as satellite stations each having a telephone subscriber's apparatus connected to a nearby commercial telephone exchange. Data phones provided by the telephone company can be used in conjunction with teletypewriting equipment and calls initiated by automatic dialing equipment also supplied by the telephone company. Monitoring of gas, oil, and water content as well as the temperature and pressure at the site can be achieved. Commands for changing valve settings at the well sites can be sent from the central station, and the command executed at the satellite station after checking the command instruction for accuracy.

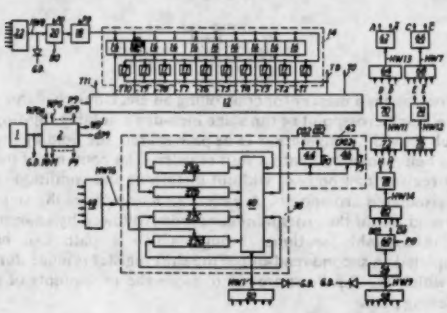
3,760,363
CALCULATING MACHINES WITH A COPY ROUTINE

James John Drage, and Norbert Kitz, both of The Island, Uxbridge, England, assignors to Bell Punch Company Limited, London, England

Continuation of Ser. No. 844,932, July 25, 1969, abandoned. This application Oct. 19, 1971, Ser. No. 190,629

Int. Cl. G06f *7/38*

U.S. Cl. 340—172.5 **6 Claims**



An electronic calculating machine with a plurality of number registers is disclosed wherein trains of ten pulses are gated to read out the registers at zero including a function control switch for copying numbers from one register into another.

3,760,364
ELECTRONIC SWITCHING SYSTEM

Masaya Yamauchi; Ko Muroga, both of Tokyo; Hirotoshi Shirasu, Yokohama; Koji Hirose, Tokyo, and Toshihiko Nakajo, Kawasaki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation; Nippon Electric Co. Ltd.; Hitachi Limited Oki Electric Industry Co., Ltd., Fujtsu Limited

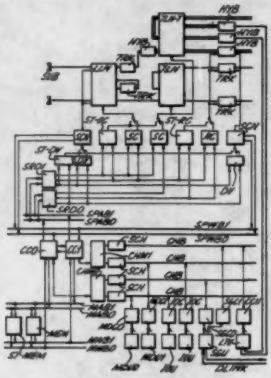
Filed Nov. 4, 1971, Ser. No. 195,681

Claims priority, application Japan, Nov. 6, 1970, 45/97200

Int. Cl. G06f *15/00, 15/16*

U.S. Cl. 340—172.5 **4 Claims**

A stored program controlled electronic switching system provided with large capacity economical peripheral memory equipments, such as magnetic drums, in which a part of the basic memory content, not subject to high speed access time, is stored permanently and also continuously varying information is periodically copied for the purpose of backing up the random access main memory devices to decrease the number of the main memory devices. The switching system comprises data channel devices consisting of channel multiplexer and sub-channel equipment in order to obtain a standard interface scheme between the central control units and various input-output devices. The system further comprises four-wire type trunk link network to be controlled by the same central control units for obtaining wider system flexibility for the application of accommodating data switching facility, trunk switching facility, etc.



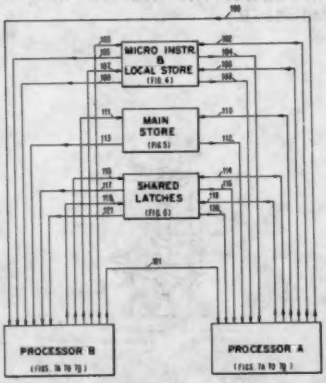
3,760,365
MULTIPROCESSING COMPUTING SYSTEM WITH TASK ASSIGNMENT AT THE INSTRUCTION LEVEL

Jerome M. Kurtzberg, Yorktown Heights; Jack L. Rosenfeld, Ossining, and Raymond D. Villani, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,193

Int. Cl. G06f *15/16*

U.S. Cl. 340—172.5 **16 Claims**



The present invention relates to a multiprocessing system wherein job assignments to the respective processors are made at the level of very small tasks. Further, the system is organized so that none of the multiprocessing capabilities need be known either to the programmer or to a supervisory program. Task assignment is done at the instruction level. By instruction level is meant a typical computer's machine language. In the disclosed embodiment, two processors are shown; however, it is to be understood that the basic concepts of the present invention could well be extended to more than two processors. Each of these processors shares a main store, a microinstruction store and a local store. Further, automatic control of the two systems is performed with the use of a set of

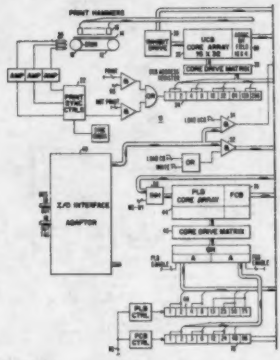
shared latches to prevent one of the processors from interfering with another, with resulting erroneous results. Maximum availability of the system is assured since the system may operate either in the multiprocessing mode or, in the event that one of the processors should fail, the other processor can continue operating completely autonomously.

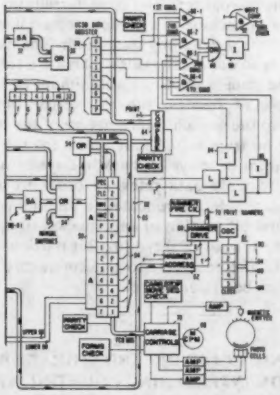
3,760,366

UNPRINTABLE CHARACTER RECOGNITION

John S. Gregor, Endicott, and Raymond Radlinsky, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,680
Int. Cl. G06f *3/12, 11/00*
U.S. Cl. 340—172.5 9 Claims





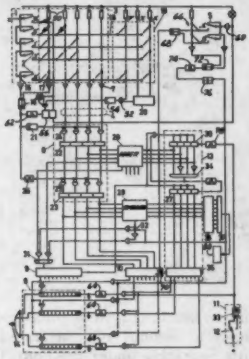
A distinctive code for each character that appears on the type train of a printer is stored in a train image field. At the time of loading this field an associative bit is stored at a particular address in an associative field, the address being identifiable with the numerical value of the bits in the code for each character. When characters to be printed are loaded into the print line buffer of the printer, the address for the associative bit is accessed directly from the print line buffer data register and the presence of the bit identifies the character as having a matching code in the train image field.

3,760,367

SELECTIVE RETRIEVAL AND MEMORY SYSTEM

Dieter Kortenhaus, Bingen, Germany, assignor to M S M Apparatebau GmbH, Bingen/Rhine, Germany

Filed Jan. 24, 1972, Ser. No. 220,014
Claims priority, application Germany, Feb. 20, 1971, P 21 08 219.9
Int. Cl. G06f *13/02, 15/40*
U.S. Cl. 340—172.5 5 Claims



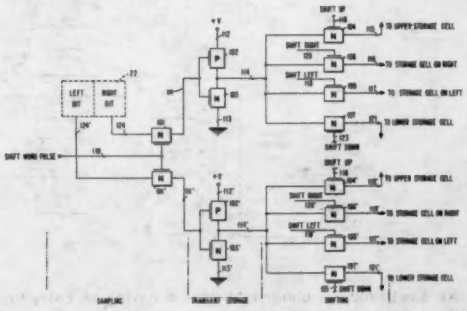
A selection and memory system for selectively retrieving data respectively stored at different addresses of a shift register memory facilitates the writing in of data to a shift register while stored data from that shift register is being read out. The system is advantageously employed for selectively retrieving one or more of a plurality of articles, such as record discs in an automatic photograph, where the data corresponds to a retrieval command signal stored within the memory at an address corresponding to the storage location of the article. The functional components of the system are readily suited for metal-oxide-semiconductor construction.

3,760,368

VECTOR INFORMATION SHIFTING ARRAY

Jack R. Dailey, Apalachin; Harry C. Kuntzleman, Newark Valley, and George E. Mitchell, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1972, Ser. No. 246,313
Int. Cl. G11c *15/00*
U.S. Cl. 340—172.5 6 Claims



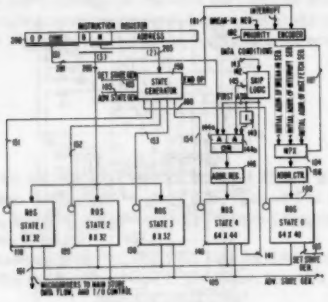
A content addressable storage array (sometimes referred to as an associative array or a functional array) having a plurality of data storage cells which allows data in one cell word group to be transferred to adjacent cell word groups or alternatively shifted left or right. This is accomplished without the data exiting the array by utilizing transfer gates between the cells which provide for the temporary storage of data during transfer operations.

3,760,369

DISTRIBUTED MICROPROGRAM CONTROL IN AN INFORMATION HANDLING SYSTEM

John Curtis Kemp, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 2, 1972, Ser. No. 259,264
Int. Cl. G06f *9/12*
U.S. Cl. 340—172.5 6 Claims



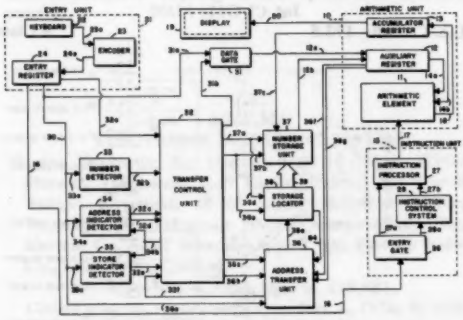
In an information handling system, microprogram control is achieved through a number of distributed microprogram storage elements operating under the control of a sequence generator in response to portions of an instruction or external signals. Each of the microprogram storage elements generates microorders for a portion of the operation of an information handling system such as instruction fetch sequence, address generation, operand fetch and instruction execution. Conditions occurring during the execution of instructions may cause a modification in the microorders generated for controlling instruction execution.

3,760,370

CALCULATOR WITH A NUMBER PROCESSING SYSTEM

Michael J. Cochran, Houston, Tex., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 26, 1971, Ser. No. 137,212
Int. Cl. G06f *9/20, 3/02*
U.S. Cl. 340—172.5 9 Claims



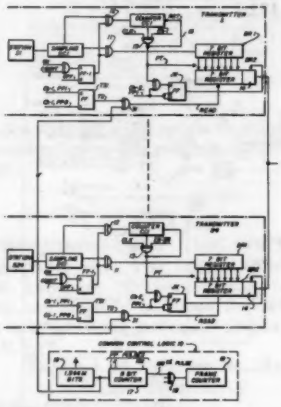
An electronic calculator is disclosed having an entry unit with a keyboard which can be utilized either to store data in or to retrieve data from a storage unit with a plurality of storage elements. Entries can be made in the keyboard to produce store, address, and readdress indicator signals as well as data and addresses. An entry detector is provided to develop and store signals in response to the type of entries made in the keyboard. An address transfer unit is provided to receive addresses from the entry unit and addresses retrieved from the storage unit. In response to the signals developed by the entry detector, a transfer control unit operates to cause an address produced by the entry unit to locate a storage element in the storage unit either by directly addressing, or by indirectly addressing, or by successively indirectly addressing storage elements in the storage unit. Both data retrieved from the storage unit and data transferred from the entry unit can be utilized by an arithemtic unit in performing calculations.

3,760,371

ASYNCHRONOUS DATA TRANSMISSION OVER A PULSE CODE MODULATION CARRIER

Satyan G. Pitroda, Villa Park, and Bernard J. Rekiere, Addison, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 14, 1972, Ser. No. 280,361
Int. Cl. G08c *25/00*; H04l *1/08*
U.S. Cl. 340—172.5 7 Claims



A data transmission technique utilizing asynchronous data transmission over a pulse code modulation (PCM) carrier, with variable data rates with sufficent redundancy to accomodate error burst. Generally, data from a data source is accumulated in a register, and transferred in parallel to another register in packets of a predetermined number of bits easily handled from a switching standpoint. The data from the secd register is read out at intervals which are a submultiple of the carrier. The data is read out a minimum of three times, over a multiple of frames, suh that error burst can be tolerated. Due to the asynchronous nature of the information, some data will be transmitted four times, for the purpose of bringing the transmission system back into synchronism, to accomodate the variable data rates. In order to indicate the number of times the data is repeated, a definite pattern is assigned to the first bit portion of each packet of data which is transmitted. The format of these first bit portions is detected and analyzed in the receiver, to determine the number of times the data has been transmitted

3,760,372

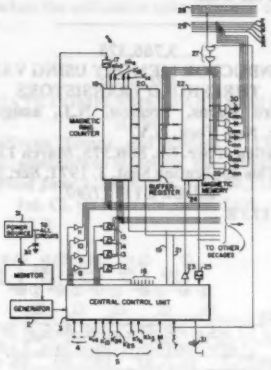
ELECTRONIC COUNTING AND STORAGE SYSTEM HAVING NON-INTERFERING COUNTING STORAGE AND READ-OUT CAPABILITY

Munir Bitran, Ramat Aviv, Israel, assignor to Patelhold Patentverwertungs & Elektroholding A G, Glarus, Switzerland

Continuation-in-part of Ser. No. 868,715, Oct. 23, 1969, abandoned. This application Dec. 8, 1971, Ser. No. 205,814
Int. Cl. G11c *19/00*; H03k *23/10*
U.S. Cl. 340—172.5 11 Claims

In an electronic counter in which each of the counting decades comprises a magnetic core shift register type ring counter enabling a non-destructive read-out, an electronic buffer register and a magnet core storage unit. The counter is

operated periodically, via a control unit common to all decades, by auxiliary pulses having a repetition frequency being high compared with the means counting pulse frequency, to enable the control unit to effect a continuous read-out



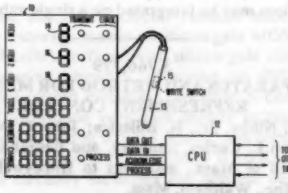
of the momentary counting state from the counter decades via the buffer registers to the associated storage units of the decades, without interfering with the normal counting operation.

3,760,373

OPTICAL DATA ENTRY AND DISPLAY SYSTEM

Maurice R. Bartz, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,911
Int. Cl. G08b *5/22*
U.S. Cl. 340—172.5 **11 Claims**



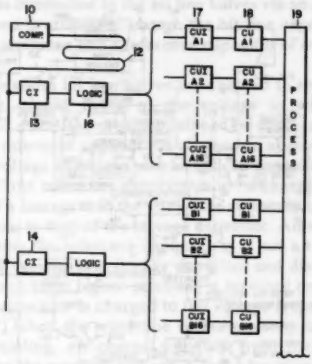
Data in the form of characters to be entered into a data processing system are traced by a light pen on a tablet consisting of an array of light emitting diodes forming segments of a pattern containing all the segments necessary to form all desired characters. All of the diodes in the array are sequentially pulsed on and off at such a high rate that the resulting light pulses are invisible to the human eye, but are sensed by the light pen which transmits corresponding electrical pulses to a register which stores the segments corresponding to the traced character. After a complete character is stored, it is displayed on the tablet by continuously energizing the same diodes corresponding to the segment pattern stored in the register. After the displayed character is verified as a correct character, the contents of the register are decoded and transmitted to a central processing unit. When the receipt of the character is acknowledged by the central processing unit, the system is reset for the entry of another character. If the displayed character is incorrect, the display and register are erased, and the character is re-entered.

3,760,374

PROCESS CONTROL SYSTEM

Saleh A. Nabi, Sharon, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Apr. 6, 1972, Ser. No. 241,546
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5 **13 Claims**



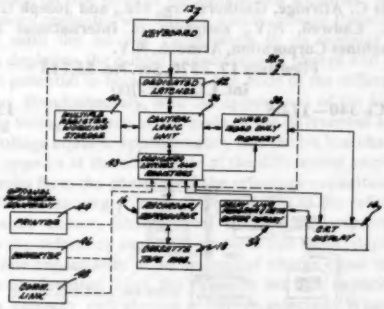
An electronic process control system including a digital computer, a computer interface that is easily replaceable in order to change computer types; a logic module for grouping the computer and controller signals and converting betwen digital and analog representations; and a control unit interface for generating analog signals for a control unit in response to computer commands and adapting the analog control unit to communicate with a digital computer.

3,760,375

SOURCE DATA ENTRY TERMINAL

Samuel N. Irwin, and Michael R. Levine, both of Ann Arbor, Mich., assignors to Sycor, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 833,898, June 13, 1969, abandoned. This application July 26, 1971, Ser. No. 166,269
Int. Cl. G06f *3/06*
U.S. Cl. 340—172.5 **46 Claims**

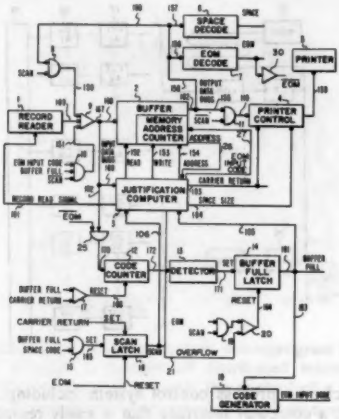


A source data entry device having a keyboard for data entry, a cathode ray tube for visual display of key-entered data, and magnetic recorders for storing entered data upon cassette-type magnetic tape cartridges, wherein control logic for the keyboard, visual display, recorders, and other input/output peripheral devices is centralized into a central logic unit, and wherein program-controlled data entry is made possible by a wired read-only memory which, in conjunction with the central logic unit, forms a programmed microprocessor whose functional configuration can be altered by changing the hardwired read-only memory.

3,760,376
SYSTEM FOR CONTROLLING OUTPUT LINES WITH LIMITED STORAGE CAPACITY

Howard C. Tanner, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,721 .
Int. Cl. G06k 3/00; G11c 7/00
U.S. Cl. 340—172.5 4 Claims

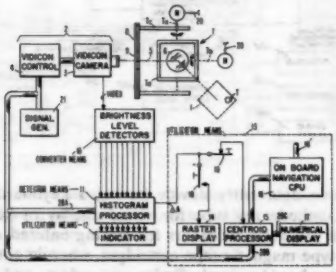


A system for justifying an output line where the total number of required data codes for computing a justification solution exceeds the buffer storage provided for the output line. Given a storage capacity of n data codes, when *n*-1 data codes have been read, counted, and stored, and a sufficient number of codes have not been stored for computing a justification solution based on the sum of the escapement values, a signaling data code is generated and stored. Then output from the buffer is initiated and continues until a space code is read. Thereafter, additional data codes are read and stored in the buffer and the above operation is repeated until a sufficient number of data codes have been read to compute a justification solution for remainder of the output line.

3,760,377
HISTOGRAM DATA PROCESSOR

Curtis C. Attridge, Gaithersburg, Md., and Joseph G. Ayers, Jr., Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 17, 1970, Ser. No. 55,713
Int. Cl. G06f 7/00
U.S. Cl. 340—172.5 12 Claims

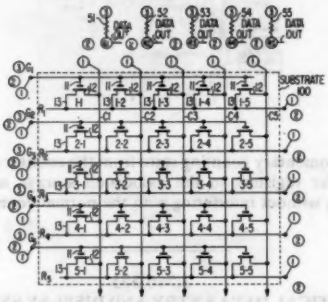


A histogram data processor that detects for the presence of and/or an intermediate class of the histogram data which has a lower frequency of occurrence that its adjacent classes. That is to say, the processor detects the particular intermediate class when such a condition is present and/or detects for the presence of such a condition in the data. Also, brightness level disciminator apparatus which includes the aforesaid processor to process brightness level data derived from a field of view to detect the presence and/or location of an object in the field. Also, an autonomous nagivation system for a moving craft which includes the aforesaid apparatus for deriving positional information of the craft.

3,760,378
SEMICONDUCTOR MEMORY USING VARIABLE THRESHOLD TRANSISTORS

Joseph Richard Burns, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 806,375, March 12, 1969, abandoned. This application Sept. 2, 1971, Ser. No. 177,321
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R 11 Claims

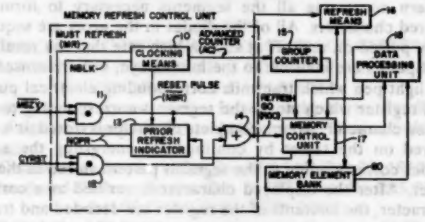


A word-organized memory array employing at each storage location only a single metal-insulator-semiconductor device. Information is stored in a device by causing it to assume either a high or a low voltage threshold state. Information is read out by applying to a device a voltage lower than that required to switch the device from one state to another but of sufficient magnitude to cause a device to conduct when in one state but not when in the other. The write and read voltages are all of the same polarity and are applied to the devices in such a way that all devices may be integrated on a single substrate.

3,760,379
APPARATUS AND METHOD FOR MEMORY REFRESHMENT CONTROL

Chester M. Nibby, Jr., N. Billerica; John C. Manton, Marlboro; John L. Curley, Sudbury, and Benjamin S. Franklin, Boston, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 29, 1971, Ser. No. 215,736
Int. Cl. G11c 7/00
U.S. Cl. 340—173 R 9 Claims



Apparatus and method for controlling the refreshing of volatile memory elements associated with data processing

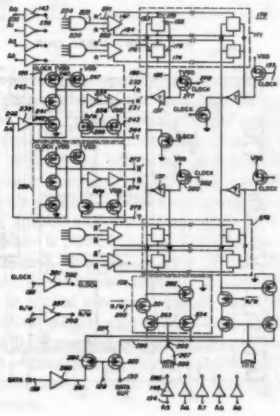
units. The invention minimizes the conflict between the memory refresh operation and the requirements for access to the memory elements during data processing operations. When conflict is unavoidable, it is resolved in favor of the refresh cycle to prevent loss of information. In memory elements of the type which are automatically refreshed during utilization by the data processing unit, a separate refresh cycle is eliminated when the utilization takes place in an appropriate interval.

3,760,380

SILICON GATE COMPLEMENTARY MOS DYNAMIC RAM

Charles R. Hoffman, Tempe, and William W. Lattin, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed June 2, 1972, Ser. No. 259,216
Int. Cl. G11c *11/24, 5/00, 7/00*
U.S. Cl. 340—173 R **14 Claims**



A monolithic integrated circuit random access memory system having a storage matrix of silicon gate MOS N-channel dynamic RAM cells interfaced with silicon gate complementary MOS addressing circuitry, requiring no diffused guard rings, and input-output circuitry. Dynamic N-channel RAM cells are used to provide very high density storage of binary data in the relatively large storage matrix, and complementary silicon gate low threshold MOS circuitry is used to implement the peripheral circuitry including the address decoding sections, refresh circuitry, and input-output section to provide extremely low power dissipation, high speed operation, low sensitivity to device parameter variations, high noise immunity, and efficient operation over a wide range of power supply voltages.

3,760,381

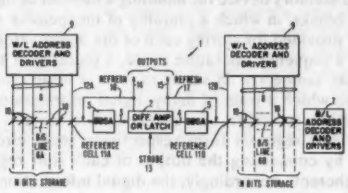
STORED CHARGE MEMORY DETECTION CIRCUIT

Ying Luh Yao, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,881
Int. Cl. G11c *11/24, 7/06*
U.S. Cl. 340—173 R **30 Claims**

A sensing circuit which is responsive to binary information represented by the level of charge in a capacitor is disclosed. The circuit comprises a differential amplifier; the nodes of which are connected to bucket brigade sense amplifier arrangements which are in turn connected to bit lines to which a plurality of memory device which store information in the form of charge are connected. Each bit line portion connected to the bucket brigade sense amplifier represents half of a bit line to which a plurality of storage devices (such as a capacitor in series with an FET gate) are connected. Each half of the bit line is also connected to a reference capacitor via an actuable FET device or other stored charge memory device. Each of the bucket brigade sense amplifiers consists of an output capacitance which is connected in parallel with the bit line capacitances of each half of the bit line via an actuable FET device. A source of voltage for charging the bit line capacitances is connected to the bit line halves via an actuable FET device and is utilized to charge the bit line capacitance, the output capacitance and a reference capacitor of one of the bit line halves.

In operation, both bit line halves are charged to some voltage which is usually equal to the voltage to which the capacitance of a selected memory cell can be charged. At the same time, a reference capacitor is charged to approximately one half the voltage to which the selected cell capacitance can be charged. If the reference capacitor is to be charged to half the voltage of a storage cell, the size of the reference capacitor should be equal to that of the storage capacitor. Another way of implementing the reference capacitor is to use a reference capacitor half the size of a storage capacitor and discharge it completely each time before selecting a memory cell. If the memory cell capacitor is charged to full voltage (representing a binary "1") when the word line of the memory cell is activated for reading, no charge will flow from the bit line capacitance to the memory cell capacitance because both are at the same level. If the memory cell capacitance were empty (representing a binary "0") charge would flow from the bit line capacitance when reading occurred, filling the memory



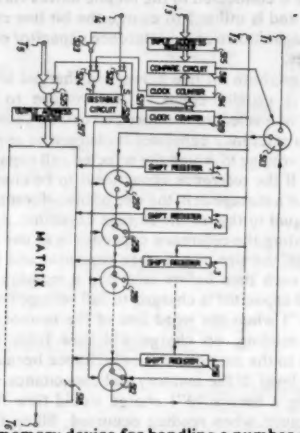
capacitor and reducing the bit line capacitor voltage by a small ion. When the bucket brigade circuit is actuated, no charge transfer occurs where the memory capacitor was full and a voltage approximately equal to the bit line charging voltage appears on one node of the differential amplifier. Where the memory capacitor was initially empty, charge transfer occurs to refill the bit line capacitance to its original level thereby depleting the output capacitance of charge and causing zero potential to be applied to one node of the differential amplifier. Simultaneously, with the appearance of the bit line charging voltage or zero at one node of the differential amplifier, a voltage equal to approximately half the bit line charging voltage appears at the other node of the differential amplifier. This results from the charging of the reference capacitance to one half the charging voltage. When reading of the reference capacitance occurs, charge from the bit line capacitance charges the reference capacitor up to its full value, depleting the bit line capacitance of an amount of charge equal to half the charge depleted from the opposite bit line capacitance when a memory cell storing a "0" is selected. When the bucket brigade sense amplifier is actuated, charge from the output capacitance thereof replenishes the bit line capacitance and leaves the output capacitance at a value of voltage approximately equal to one half of the charging voltage. In this manner, when a selected memory device associated with one half of a bit line is being read, the reference capacitance associated with the other half of the bit line is utilized to provide a voltage which is always the same regardless of the voltage on the selected device. The appropriate reference capacitor is selected by arranging the decoding such that when a memory device on one bit line half is selected, the reference capacitor on the other bit line half is always selected.

3,760,382

SERIES-PARALLEL SHIFT REGISTER MEMORY

Takayuki Itoh, Kawasaki, Japan, assignor to Takachiho Koeki Kabushiki Kaisha, Osaka-shi, Japan

Filed Mar. 3, 1972, Ser. No. 231,562
Claims priority, application Japan, Mar. 5, 1971, 46/11304
Int. Cl. G11c 19/00, 21/00; H03k 23/24
U.S. Cl. 340—173 RC 8 Claims



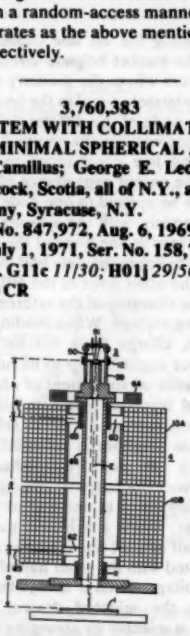
A digital memory device for handling a number of digital information blocks, in which a plurality of inexpensive shift registers are provided for storing each of the digital information blocks. In a sequence operation mode, a plurality of the shift registers are connected in series to form a large circulating memory, to which a train of many digital information blocks are sequentially stored. In a parallel operation mode, a plurality of the shift registers form respectively small circulating memories by connecting the output of each shift register to the input thereof. Accordingly, the digital information blocks stored in the shift registers can be read out for each digital information block in a random-access manner from the shift registers, which operates as the above mentioned small circulating memories respectively.

3,760,383

STORAGE SYSTEM WITH COLLIMATED ELECTRON BEAM FOR MINIMAL SPHERICAL ABERRATION

John E. Wolfe, Camillus; George E. Ledge, Liverpool, and Homer H. Glascock, Scotia, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 847,972, Aug. 6, 1969. This application July 1, 1971, Ser. No. 158,763
Int. Cl. G11c 11/30; H01j 29/56, 31/08
U.S. Cl. 340—173 CR 16 Claims



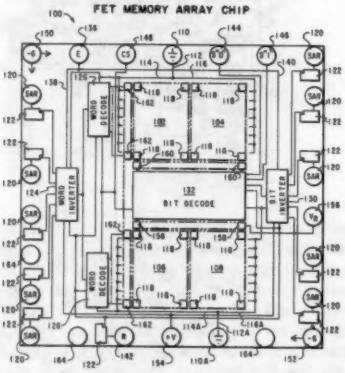
A storage system for the mass recording and readout of digital data with ultra high resolution. An electron beam structure is provided for forming a beam of extremely small focused spot diameter, on the order of 0.1 microns, and high current density capability, on the order of 1,000 amperes per sq. cm., which records data by scanning over defined areas of the storage medium surface and micromachining elemental portions of said medium as a function of beam modulation. Readout may be subsequently accomplished by similarly scanning the beam at reduced power density and detecting electrons that have been transmitted by or reflected from the storage medium.

3,760,384

FET MEMORY CHIP INCLUDING FET DEVICES THEREFOR AND FABRICATION METHOD

Walter F. Krolikowski, Hopewell Junction, and Donald F. Lund, Hyde Park, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,277
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R 37 Claims



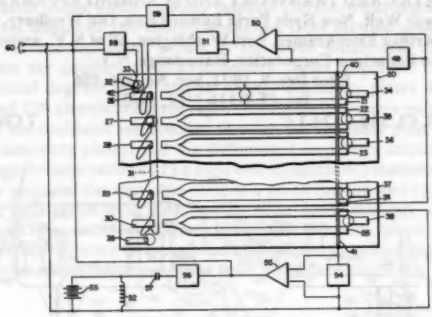
This disclosure is directed to a field effect transistor (FET) semiconductor chip which includes a number of FET memory cells or circuits connected together to form a memory system or array. Some FET devices used in the memory cells of the memory array and in other locations of the memory system contain "crooked" gates. A number of different gate geometries, dimensions, or size ratios are used for a variety of FET devices used in the memory array.

Various techniques are also disclosed for laying out a very dense FET memory array on a tiny semiconductor chip so as to preserve minimum spacing and dimension rules for metallized and diffused regions. Various structures and techniques are described to maximize memory cell density within minimum semiconductor real estate. Additional features include a varying number of alignment marks for the different levels of masks used in fabricating the FET memory chip. The FET fabrication process is also disclosed which permits the formation of a high speed N-channel FET memory array with devices that have high transconductance and other desired device parameters, features and characteristics to provide a reliable, high performance FET memory array system. The fabrication process includes the formation of a thin epitaxial layer prior to the diffusion of source and drain regions and the use of a double photoresist layer in one step of the process wherein a block-out mask pattern is provided in each of the two photoresist layers to minimize pinhole probelms and to permit precise alignment of the simultaneous etched out gate window and source and drain contact areas in the thick oxide located on the surface of the chip.

3,760,385
OPTICAL SCANNER

John David Bierlein, Wilmington, Del., assignor to E.I. du Pont de Nemouss and Company, Wilmington, Del.

Filed June 30, 1971, Ser. No. 158,368
Int. Cl. G11c *11/14, 11/42*
U.S. Cl. 340—174 YC 11 Claims

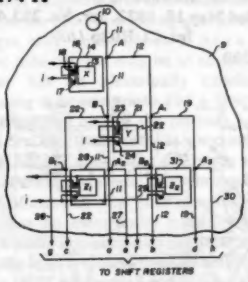


In certain optically transparent ferrimagnetic and ferromagnetic crystal plates wherein the easy axis of magnetization is normal to the plate, reversed cylindrical magnetic domains can be generated and maintained in a stable but mobile condition. Tracks defined by bands of magnetic material along which a magnetic gradient is generated can be employed to move the bubble domains while maintaining their optically accessible area substantially constant. Polarized light passing through the plate is passed through an analyzer set to distinguish the differing rotation of light in the domain by the Faraday effect. In one embodiment, a scanner with a spiral track is used to record electrical signals, such as audio signals on photosensitive media, and to play back the same. The intensity of the light passing the scanner can be modulated or the area of the reversed cylindrical domain can be modulated to provide either density modulation or area modulation in the recording process.

3,760,386
MAGNETIC DOMAIN LOGIC DECODER

Farooq Quadri, Addison, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed July 27, 1972, Ser. No. 275,661
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 6 Claims

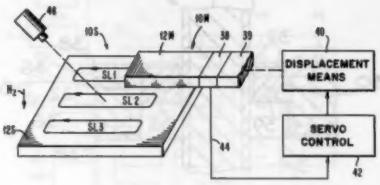


Gate for directing propagation of bubble domains entering an intersection of propagation channels comprises a pair of closed loop channels, one within the other, the outer loop having a bubble-holding position adjacent said intersection. Selection of one channel at the intersection is made by transferring bubbles from the inner to the outer loop, causing a bubble to be positioned adjacent said intersection, thus deflecting a bubble entering the intersection into the desired route.

3,760,387
MAGNETIC BUBBLE DOMAIN SYSTEM USING MULTIPLE MAGNETIC SHEETS

Hsu Chang, Yorktown Heights, and George J. Fan, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 22, 1972, Ser. No. 265,382
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF 33 Claims

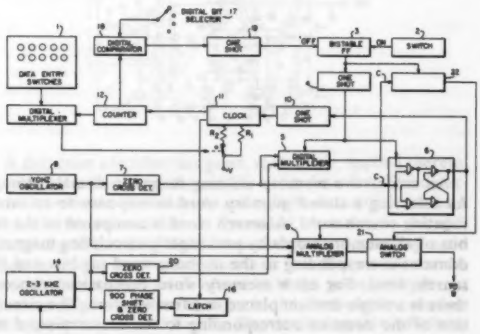


A magnetic bubble domain system in which a single magnetic sheet, or a plurality of magnetic sheets, is used only for storage of information, while another magnetic sheet (memory sheet) is used for writing information into the storage magnetic sheet and for reading information from the storage magnetic sheet. The memory sheet contains circuitry for such functions as generation, decoding, sensing, clearing, storage, etc. The memory sheet can be positionally displaced with respect to the storage sheet to create bubble domains in the storage sheet and to detect the presence and absence of domains in the storage sheet. Means are provided to directly map information from the storage sheet to the memory sheet. Thus, this magnetic subsystem provides storage in a first magnetic sheet while the transducer circuits are in a second magnetic sheet which can be positionally displaced with respect to the first magnetic sheet for access of information into and from the first magnetic sheets.

3,760,388
AUDIO WAVEFORM FOR DIGITAL RECORDING

Lawrence S. Schmitz, Pittsburgh; John E. Lambright, Monroeville, and Arthur M. Lewis, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1971, Ser. No. 167,582
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 H 10 Claims



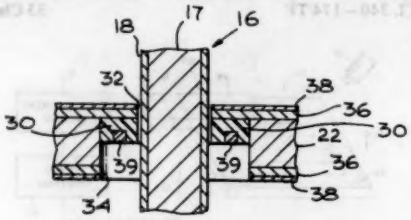
Digital information is entered, stored on and read off of transmission channels containing audio information. The digital information is stored in the form of discrete audible tone bursts representative of the state of each bit of digital information. Subaudible tone bursts are utilized for keying associated circuitry.

3,760,389

BATCH FABRICATED MAGNETIC WIRE MEMORY

Alfred D. Scarbrough, Northbridge, Calif., assignor to Bunker-Ramo Corporation, Oak Brooke, Ill.

Division of Ser. No. 864,789, Oct. 8, 1969, Pat. No. 3,685,145.
This application Sept. 24, 1971, Ser. No. 183,613
Int. Cl. G11c 11/14, 5/04
U.S. Cl. 340—174 MA 5 Claims



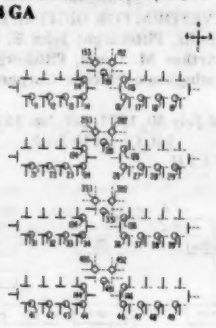
A magnetic wire memory construction and method of making in which the memory comprises a plurality of stacked memory planes having memory wires inserted in aligned holes thereof. Each memory plane is fabricated using precision batch fabricated selective chemical etching techniques on a single self-supporting metal sheet so as to form pairs of insulated drive lines within the sheet looping around respective rows of a row-column matrix of memory wire receiving holes. Additional metal and magnetic layers may be provided over the surfaces of the sheets for increasing shielding and reducing memory cell disturbances.

3,760,390

CYLINDRICAL DOMAIN ASSOCIATIVE MEMORY APPARATUS

Hiroshi Murakami, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 9, 1972, Ser. No. 251,622
Claims priority, application Japan, June 4, 1971, 46/39449
Int. Cl. G11c 15/00, 11/14
U.S. Cl. 340—174 GA 6 Claims



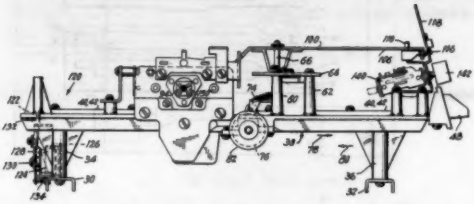
An associative memory utilizing magnetic domain storage for selecting a stored memory word in response to an interrogating search word. A search word is compared to the tag bits of all memory words by proximately circulating magnetic domains corresponding to the memory word tag bits and the search word. For each memory word comparison process, there is a single domain placed in a first location. The circulation of the domains corresponding to the memory word tag bits and the domains corresponding to the search word causes corresponding bits, represented by the presence or absence of domains, of said tag bits and search word to simultaneously appear adjacent to said first location. If the adjacent bits are identical no resultant repelling force is applied to the domain in said first location. However, if the adjacent bits are not identical, i.e., one adjacent location contains a domain whereas the other adjacent location does not contain a domain, a resultant repellant force causes the domain in said first location to move away from said first location. After the circulation is complete, the existence of a domain in said first location, indicates that the search word is the same as the tag bits in the storage area near the first location.

3,760,391

DATA CARD TRANSPORT AND SCANNING APPARATUS

Edgar Wolf, New Hyde Park; Edward Lau, Old Westbury, and Arthur Eisenkramer, Port Washington, all of N.Y., assignors to Redactron Corporation, Hauppauge, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,486
Int. Cl. G11b 5/10, 19/02
U.S. Cl. 340—174.1 C 7 Claims



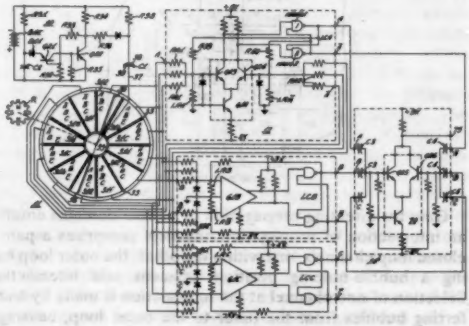
A data card transporting apparatus for scanning a data card is provided which includes a head adapted for selectively scanning one of a plurality of data channels on the card, said head being driven by a lead screw which in turn is driven incrementally by a solenoid actuated device, which includes pins mounted on a disc and driven by pawls in either of two rotary directions to drive the lead screw. A drive is provided for the data card which consists of a capstan on each side of the card with which there is provided a cooperating pinch roller which is actuated by the use of a corresponding solenoid. An ejection mechanism is also provided which consists of a lever which engages an end of the card when the latter is in fully inserted position, the lever being solenoid actuated to impel the card to a position whereat it may be engaged by one of the aforesaid capstan and pinch roller arrangements. Additionally, the head is especially arranged to be accommodated in a trough provided in the bed of the device so that the card, in effect, is pressed into the trough by the head to provide for optimum contact conditions.

3,760,392

CAPACITIVE POSITION SENSOR

Frederick A. Stich, Hales Corners, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 15, 1972, Ser. No. 253,418
Int. Cl. H02p 1/00
U.S. Cl. 340—200 25 Claims



A capacitive rotor position sensor generates three phase output pulses indicative of the position of the rotor of a three

phase commutatorless D.C. motor. A radially elongated capacitor plate connected to the motor rotor is rotatably mounted adjacent 12 circumferentially displaced stationary capacitor plates, and a high frequency oscillator is coupled to the rotatable plate. A differential amplifier for each phase has one input coupled to three adjacent first stationary capacitor plates which together subtend 180 electrical degrees and the other input coupled to three adjacent second stationary capacitor plates which together subtend 180 electrical degrees and are displaced 180 electrical degrees from the first plates, and the corresponding inputs of the three differential amplifiers are coupled to first stationary plates displaced 120 electrical degrees apart and to second stationary plates displaced 120 electrical degrees apart. The high frequency pulses from the oscillator are coupled through the rotatable plate to the stationary plates, and the differential amplifiers enhance the one-to-zero ratio of (1) a logic one signal from a stationary plate opposite the rotatable plate at a given instant; and (2) a logic zero signal from a stationary plate simultaneously displaced 180 electrical degrees from the rotatable plate, to derive square wave output pulses at a frequency proportional to motor speed indicative of the rotor position.

3,760,393

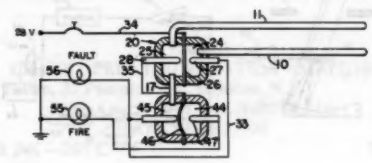
OVERHEAT DETECTION SYSTEM

John E. Lindberg, 1211 Upper Happy Valley Rd., Lafayette, Calif.

Continuation-in-part of Ser. No. 131,976, April 7, 1971, abandoned. This application May 26, 1972, Ser. No. 257,437

Int. Cl. H01h *37/40*

U.S. Cl. 340—229 **29 Claims**



A fire and overheat detection system. A primary sensor tube and a reference sensor tube each have one closed end and one responder end and contain a solid that reversibly emits gas in gross quantities above a predetermined temperature and takes it back below that temperature, and each has a continuous free space around the solid containing gas. In the primary sensor tube this gas may be at about 2 p.s.i.a., while in the reference sensor tube the gas may be at about 1 p.s.i.a. A primary responder has an electrically conductive primary diaphragm dividing a housing into (1) a first chamber connected to the responder end of the primary sensor tube and provided with a first electrode and (2) a second chamber connected to the responder end of the reference sensor tube and provided with a second electrode, the primary diaphragm normally being out of contact with both electrodes. A confirmation responder has an electrically conductive confirmation diaphragm electrically connected to the second electrode and dividing a housing into a closed third chamber at a fixed low pressure, with a third electrode, and a fourth chamber connected to and at the same pressure as the second chamber and having a fourth electrode, against which the confirmation diaphragm normally rests. Electrically actuable fault warning means is connected on one end to both of the first and fourth electrodes and on the other end to ground, and electrically actuable fire and overheat warning means is connected on one end to the third electrode and on the other end to ground. Electrical potential means is connected to said primary diaphragm.

3,760,394

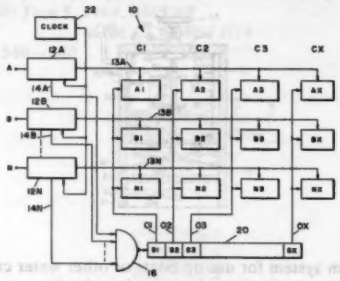
EVENT SEQUENCE DETECTOR

James C. Fletcher, Administrator of National Aeronautics and Space Administration with respect to an invention of, and Michael F. Hanna, 1213 Chesney Ave., Glendora, Calif.

Filed Feb. 4, 1972, Ser. No. 223,560

Int. Cl. G08b *23/00, 26/00*

U.S. Cl. 340—223 **8 Claims**



An event sequence detector is disclosed comprising a plurality of input units, each associated with a row of bistable elements arranged in an array of rows and columns. The detector also includes a shift register which is responsive to clock pulses from any of the units to sequentially provide enabling signals on its output lines each of which is connected to the bistable elements in a corresponding column. When an event-indicating signal is received by an input unit it provides a clock pulse to the shift register to provide the enabling signal on one of its output lines. The input unit also enables all its bistable elements so that the particular element in the column supplied with the enabling signal from the register is driven to an event-indicating state.

3,760,395

OPTICAL SMOKE DETECTOR

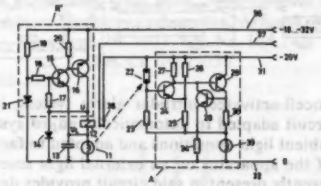
Peter Muller, Oetwil a. See, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland

Filed Dec. 14, 1971, Ser. No. 207,791

Claims priority, application Switzerland, Dec. 21, 1970, 18902/70

Int. Cl. G08b *21/00*

U.S. Cl. 340—237 S **11 Claims**

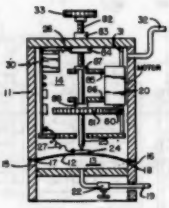


A detection chamber has gases, such as air, applied thereto, in which the presence of smoke is to be detected. The detection chamber is illuminated, and a light detector, such as a photoelectric transducer is provided, located to be differentially affected by light from the gases, depending upon whether smoke is included therein or not. To provide for detection of even small levels of smoke in the gases, and prevent spurious response due to changes in the illumination, an electric supply is provided for the illumination source which includes an electric lamp, and a power control means which senses the power applied to the lamp and controls power to a constant level. Preferrably, power is interrupted to the lamp, periodically, and at a rate which is so high that the thermal inertia of the lamp will provide for constant light output, the lamp itself being included in a circuit which has an energy storage device, such as an inductance therein to provide for practically continuous flow of current through the lamp.

3,760,396
BOAT AND SWIMMING POOL INTRUSION DETECTOR

Frederick R. Haselton, 1205 Fallsmead Way, Rockville, Md.

Continuation-in-part of Ser. No. 106,145, Jan. 13, 1971, abandoned. This application June 2, 1971, Ser. No. 149,136
Int. Cl. G08b 21/00
U.S. Cl. 340—240 16 Claims

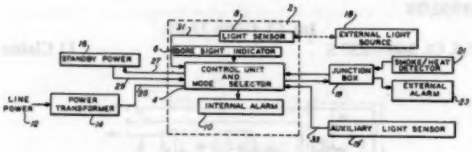


An alarm system for use on boats or other water craft. The base displacement of the boat is altered when an intruder boards the boat, or when excessive water is shipped in the bilge. The increased displacement is monitored in a pressure-sensitive chamber, and if the displacement exceeds a predetermined level, a switch in the pressure-sensitive chamber is activated, thereby triggering an alarm. The alarm system is also applicable to swimming pools. The water level in a pool will rise if an intruder enters the pool, or if someone inadvertently falls. The change in pool water level is monitored in a pressure-sensitive chamber, and if the change exceeds a predetermined level, an alarm is energized.

3,760,397
ALARM SYSTEM

Josh B. Taggart, Box 366, Rt. 5, Bristol, Tenn.

Filed Nov. 17, 1970, Ser. No. 90,338
Int. Cl. G08b 13/18
U.S. Cl. 340—258 B 8 Claims



A photocell-activated intruder alarm system, including a control circuit adapted to automatically adjust system operation to ambient light conditions and adapted to facilitate bore sighting of the apparatus on an external light source. A time delay inherently present in said circuit provides delay in arming of the alarm after activation of the system, whereby a user may remove himself from the protected area without discharging the alarm.

3,760,398
DEVICE FOR DETECTING FLAME OUT IN A GAS TURBINE

Edward D. Riley, Marblehead, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

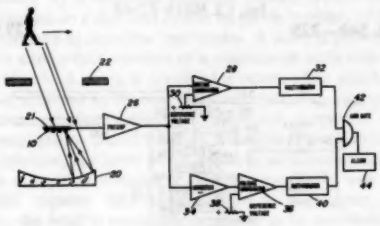
Filed July 7, 1971, Ser. No. 160,387
Int. Cl. G08b 21/00; G01n 27/30
U.S. Cl. 340—228.1 6 Claims

A device for detecting the presence or absence of a flame in the combustion chamber of a gas turbine or the like consisting of a pair of spaced, tubular electrodes extending through the wall of the chamber and into the gas stream. Combustion occurring in the chamber and the associated ionization produces electrically charged electrons in the gaseous gap between the electrodes. The voltage output is in the form of varying resistance of the gap. When no combustion is present in the chamber, the resistance approaches infinity and with combustion the resistance reduces to a level measurable below infinity. The electrodes are cooled by circulating air to give them a longer life.

3,760,399
INTRUSION DETECTOR

Frank Schwarz, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Dec. 20, 1971, Ser. No. 209,660
Int. Cl. G08b 13/18
U.S. Cl. 340—258 D 6 Claims



A simple optical system collects and applies radiation from a predetermined field of view onto a thermopile detector. The thermopile detector has a plurality of rows of thermocouples having all active junctions with alternate polarity which are aligned in columns of the same polarity, whereby in response to an object moving across the thermopile an output signal is produced of alternately changing polarity. Logic circuitry is provided for processing the signals from the thermopile in a predetermined polarity sequence to discriminate against false alarms and for indicating the presence of an intruder and sounding an alarm.

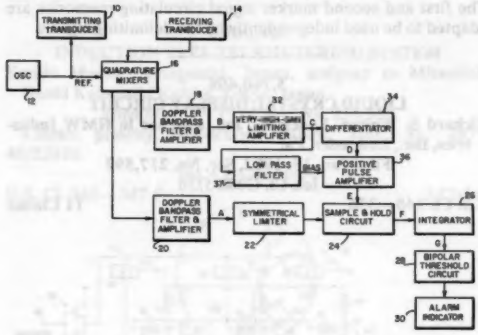
3,760,400
INTRUSION DETECTION SYSTEM EMPLOYING QUADRATURE SAMPLING

Aaron A. Galvin, Lexington, and L. Dennis Shapiro, Lincoln, both of Mass., assignors to Aerospace Research, Inc., Boston, Mass.

Filed Feb. 10, 1972, Ser. No. 225,049
Int. Cl. G08b 13/24
U.S. Cl. 340—258 A 13 Claims

An intrusion alarm system for the reliable detection of moving targets in a manner which discriminates against noise and other interfering phenomena. Signals returned from a zone under surveillance are processed by quadrature-phased detectors, producing a pair of Doppler signals. Zero crossings of one Doppler signal are used to produce pulses that are employed to sample the other Doppler signal, the sampled signal being stored and integrated to provide an integrated output

signal. An alarm indication is produced upon exceedance of a predetermined threshold by the integrated output signal. In the presence of interfering phenomena, the sample pulses occur at random times causing a bipolar fluctuating integrated output signal which does not cross the predetermined



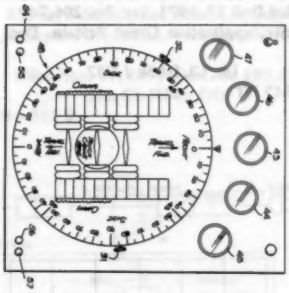
threshold. In the presence of a true moving target, sample pulses of regular timed relation are provided to cause an integrated output signal of sufficient value to exceed the predetermined threshold. An alarm indication is thereby provided only in response to a true moving target.

3,760,401

CRANE OPERATED ROTATION MONITOR

Harry Tallon, 37 Pompton Rd., Haledon, N.J.

Filed Apr. 5, 1971, Ser. No. 130,914
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 C **7 Claims**



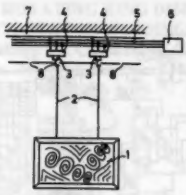
A crane operated rotation monitor includes a means to transduce mechanical rotation to electrical energy and means to transduce the electrical energy to mechanical rotation. An indicator rotates in correlation with the crane rotation thereby providing a visual monitor of the crane position. Means are provided to actuate warning lights to indicate danger zones. An alarm alerts the crane operator of a dangerous position of the crane. Additional means are provided to test a positive functioning of the warning lights and circuits.

3,760,402

ELECTRICAL INSTALLATION FOR PROTECTING MOVABLE ITEMS

Rudolf Magerle, Mannedorf, and Fritz Datwyler, Stafa, both of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Continuation-in-part of Ser. No. 838,300, July 1, 1969, abandoned. This application Apr. 3, 1972, Ser. No. 240,741
Claims priority, application Switzerland, July 3, 1968, 10022/68; June 5, 1969, 8569/69
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 **13 Claims**



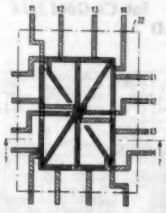
An electrical installation for protecting articles suspended by suspension means against theft or damage, such installation comprising at least one force transducer means embodying at least one piezo-electric element. The force transducer means is disposed at the suspension means in such a way that it is normally loaded with a force of a steady-state value formed by the weight of the article to be protected. The piezo-electric element possesses a main sensitivity direction and is disposed in such a way that this main sensitivity direction is essentially identical with the direction of the force formed by the weight of the article and applied to said force transducer means. There is also provided charge amplifier means associated with and coupled with said force transducer means for generating a signal when the force acting upon siad force transducer means deviates from the steady-state value by a predetermined small amount either in the sense of an increase or a decrease, and an alarm device means is coupled with and triggered by said signal from said charge amplifier means.

3,760,403

GAS PANEL DISPLAY HAVING MONOGRAM TYPE CHARACTERS WITH MATRIX ADDRESSABLE STROKES

B. William Kippenhan, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,743
Int. Cl. G09f *9/30*
U.S. Cl. 340—336 **11 Claims**



A high resolution gaseous discharge display comprises an encapsulated panel array of bistable charge storage areas defining linearly shaped discharge cells or sites, each cell being defined by a pair of congruent linear portions formed by generally orthogonally arranged conductors insulated from direct contact with the gas by a dielectric, which, when properly energized, produce a confined gaseous discharge in the selected cell. The cells are arranged in character font areas

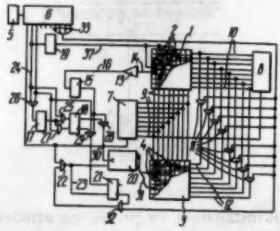
in columns and rows at the intersections of groups of the conductor lines, the conductors being configured at the character positions to define linear cells constituting character font strokes or elements.

3,760,404

CHESS GAME PROGRESS DEMONSTRATION DEVICE

Gleb Sergeevich Khlebutin, ul. Bolsheviststskaya, 200, kv. 30, Perm, U.S.S.R.

Filed July 7, 1972, Ser. No. 269,586
Int. Cl. G08b *23/00*
U.S. Cl. 340—323 **2 Claims**



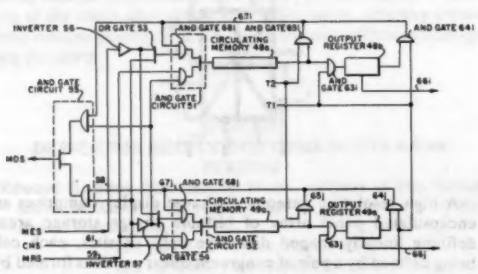
A chess game progress demonstration device which comprises a chessboard with pieces; a demonstration panel with 64 actuating units; a pulse shaper; a pulse counter; a check trigger with separated inputs and a control unit, every chessman being provided with an oscillating circuit tuned to the frequency allocated to a particular category of chessmen, while placed under every square of the chessboard is an inductance coil coupled with the output of the pulse generator feeding excitation pulses in succession to all inductance coils. The pulse shaper has its input connected to the outputs of all inductance coils and its output connected, according to signals from the control unit, first to the complementing input of the pulse counter for a calibrated time interval starting at the moment an excitation pulse arrives to the subsequent inductance coil and then, to one of the inputs of the check trigger.

3,760,405

CHARACTER DISPLAY SYSTEM UTILIZING CIRCULATING MEMORIES

Atsushi Ishii, Kawasaki; Masayuki Murakami, Yokohama; Yoichi Hagiwara, Kawasaki; Tomio Ono, Tokyo; Kiyoshi Adachi, Kawasaki, and Shuji Hashimoto, Chiba, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 20, 1971, Ser. No. 209,965
Claims priority, application Japan, Dec. 24, 1970, 45/118083
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **3 Claims**



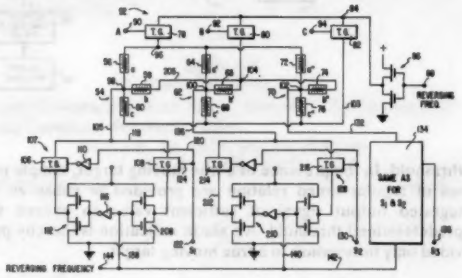
In a character display system having an electronic computer for providing code informations, a keyboard provides input informations. A control arrangement couples the computer and the keyboard to a display system. The control arrangement comprises a circulating memory coupled to the computer and the keyboard for storing informations from the computer and from the keyboard. First and second marker signal circulating memories circulate first and second marker signals synchronously with the circulating memory. Delimiting signals for delimiting the computer are supplied from the keyboard. The first and second marker signal circulating memories are adapted to be used independently by the delimiting signals.

3,760,406

LIQUID CRYSTAL DISPLAY CIRCUIT

Richard S. Walton, Lancaster, Pa., assignor to HMW Industries, Inc., Lancaster, Pa.

Filed Jan. 13, 1972, Ser. No. 217,592
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **11 Claims**



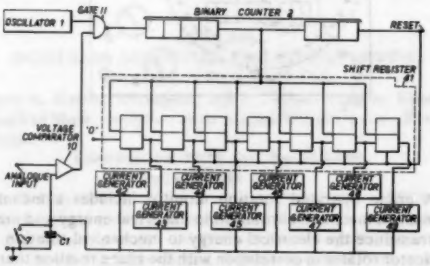
A circuit for multiplexing or energizing the crystals of a nematic liquid crystal display in timed sequence. Complementary MOS transistor logic circuits are used to create an equal potential at the opposite ends of these liquid crystals that are to be deenergized. The remaining liquid crystals are energized through direct paths or through paths in series with other energized crystals.

3,760,407

P.C.M. CODERS

John Brian Terry, Maldon, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England

Filed Dec. 10, 1971, Ser. No. 206,749
Claims priority, application Great Britain, Dec. 19, 1970, 60,407/70
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 NT **4 Claims**



To achieve a segmented-law analogue to digital signal conversion, a capacitor is charged by a constant current which changes as the states of the three most significant digits of a bi-

nary counter, counting pulses supplied by an oscillator, change. Counting ceases and the count is read out when the capacitor voltage reaches the sampled analogue signal voltage. The constant current is derived from a constant current generator and either three current dividers or three or more further constant current generators which are switched in to or out of circuit as the count changes.

3,760,408

INDUCTION TYPE TELEMETERING SYSTEM

Yoshio Maeda, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1972, Ser. No. 238,558

Claims priority, application Japan, Mar. 31, 1971, 46/23198

Int. Cl. G08c 9/04

U.S. Cl. 340—347 P **3 Claims**

A digit wheel bearing 10 decimal digits is provided on the magnetic disc-shaped portion thereof with four coupling openings radially aligned with selected four of the digits. When the wheel rotates, the openings are stepwise moved between five pairs of driving and output windings disposed in opposite relationship at equal angular intervals on both sides of the disc-shaped portion respectively, with the driving windings continuously energized with an alternating current. At each angular position of the wheel selected two of the openings are always positioned between selected two pairs of opposite windings permitting their electromagnetic coupling. Thus the two output windings produce respective voltages indicating a corresponding coded digit in the form of a two out of five code.

3,760,409

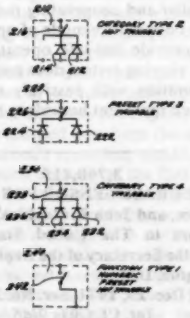
PROGRAMMABLE KEYBOARD AND KEYS

Murray A. Ruben, Belmont, and Robert F. Collings, Stow, both of Mass., assignors to Alan M. Voorhees, Montgomery County, Md.

Filed Nov. 17, 1971, Ser. No. 199,478

Int. Cl. H04q 3/00

U.S. Cl. 340—365 S **20 Claims**



A programmable keyboard and key set with a plurality of matrix locations each adapted for receiving a key and each having a number of terminals. In the embodiment described below, at least four types of keys can be used, each electrically connecting one of the terminals to a different combination of terminals so that the key board can be programed by the type of key inserted at each of the matrix locations. Each matrix location is scanned sequentially by two counters with the count stopped to identify the location whenever a manually operated key is encountered. Circuitry is also included to prevent stopping the count whenever two keys are simultaneously operated.

3,760,410

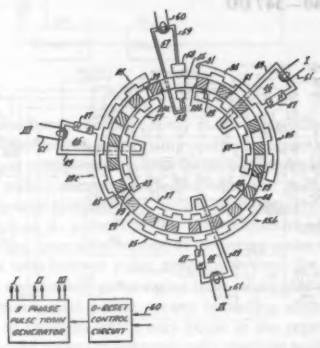
THREE PHASE ROTATING RING DISPLAY WITH MULTI-STATOR WINDINGS

Hans G. Dill, 2870 Tobago Pl., Costa Mesa, Calif.

Filed Jan. 26, 1972, Ser. No. 220,930

Int. Cl. G08b 5/00

U.S. Cl. 340—378 R **12 Claims**



A data display device which includes an indicia-carrying rotor driven by three multi-pole stators which extend collectively around the rotor. The rotor caries a plurality of equally spaced-apart magnetic domains upon which the three stators act in succession. Some of the stators are individually driven, each by a separate coil. Other stators share a common coil, resulting in a saving in cost, weight, and size. The use of a single permanent magnet to steadily magnetize several stators is also disclosed.

3,760,411

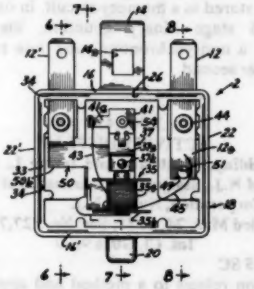
AUDIO SIGNALLING DEVICE

Lawrence A. Youhanaian, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Sept. 10, 1971, Ser. No. 179,487

Int. Cl. G10k 9/12

U.S. Cl. 340—388 **14 Claims**



An audio signalling unit including a housing body made of molded synthetic plastic material and having an end wall and

transversely extending side walls defining an opening into the housing body. This housing body has various positioning shoulders and locator means molded integrally therewith for supporting and positioning a vibratable reed, contact carrying plates and a coil all forming a buzzer which vibrates the reed. The opening into said housing body is closed by a vibratable metal buzzer-forming diaphragm bridging the side walls of the housing body and coated on the outside thereof with an insulating material so that no electrical contact can be made with the metal body of the diaphragm from the outside of the housing and the outer surface thereof is insulated from the electrical conponents inside the housing.

3,760,412

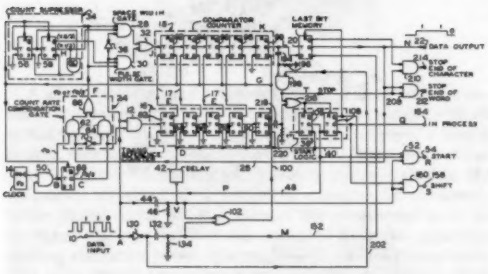
RATE ADAPTIVE NONSYNCHRONOUS DEMODULATOR APPARATUS

Roland O. Barnes, 834 S. 296th Pl., Federal Way, Wash.

Filed July 1, 1971, Ser. No. 158,799

Int. Cl. G06f 5/00

U.S. Cl. 340—347 DD **18 Claims**



A nonsynchronous binary demodulator apparatus is described in which a series pulse duration modulated binary input signal of varying pulse rate is demodulated to form series binary output signals of nonreturn to zero type and shift output pulses synchronized to the bits of such output signals which are suitable for application of binary data into the shift register of a computer. A dynamic reference technique is employed to compensate for the varying pulse rate of the input signal in which the width of an input pulse and the width of the space between successive input pulses are compared by a comparator counter with a time reference signal derived from the immediately preceeding input pulse by a timing reference counter. The zero bit and one bit binary input pulses have widths of one and two time units, respectively, while the time reference signal has an effective width of one and a half time units. Such reference signal is derived from both zero bit and one bit pulses by adjusting the counting rate of the comparator counter with a compensation gate that changes the frequency of the clock pulses applied to such counter according to the last output bit stored in a memory circuit. In one embodiment employing 16 stage binary counters, the demodulator operated over a nonsynchronous pulse rate range of 2.5 to 5,000 pulses per second.

3,760,413

ACTIVITY DISPLAY

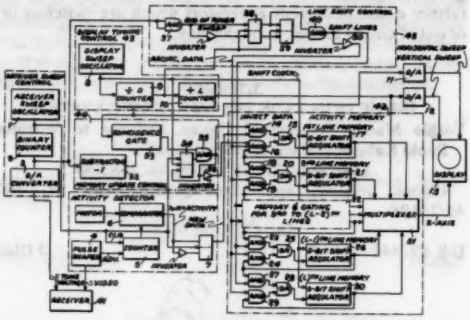
Francis L. Fielding, Montclair, and Irving L. Fletcher, Fairlawn, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 24, 1971, Ser. No. 127,723

Int. Cl. G01s 9/00

U.S. Cl. 343—5 SC **11 Claims**

This invention relates to a method and apparatus for displaying the presence or absence of signal activity. Signal activity is stored at a slow rate optimum for the receiver and then read out at a fast rate (above that of the flicker rate), so that the operator has a visually constant display output and fast phosphors can be used with high light outputs. The display is in the form of a "falling raster" in which successive stored



sweeps are vertically ordered; the newest at the top, the oldest at the bottom. In sequence, the oldest sweep is purged from storage and the newest activity added in a spatially ordered manner to the raster.

3,760,414

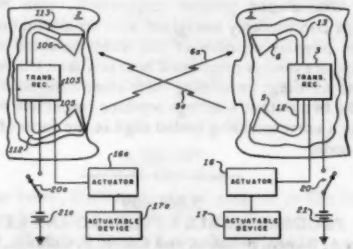
BASE BAND VEHICLE SAFETY APPARATUS

Alexander M. Nicolson, Concord, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,675

Int. Cl. G01s 9/56

U.S. Cl. 343—6.5 R **20 Claims**



A vehicle safety apparatus includes directive radio means for the detection of an impending collision with another vehicle and for actuation of restraining or other safety devices for protecting occupants of both vehicles if a crash event actually occurs. Base-band radio pulse transmission and reception devices provide forward and rearward sensing of the relative locations of cooperating vehicles, each vehicle being equipped with a pair of similar and cooperating radio detector systems. In addition to the cooperative mode of operation, the forward viewing sensors provide fail-safe operation where an interrogated rearward viewing system does not respond, and otherwise provide operation with passively reflecting objects of various kinds which represent hazards to the vehicle or its passengers.

3,760,415

MICROWAVE CRASH SENSOR FOR AUTOMOBILES

F. Ross Holmstrom, and John B. Hopkins, both of Cambridge, Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

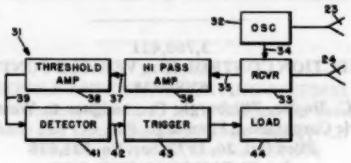
Filed Dec. 23, 1971, Ser. No. 211,579

Int. Cl. G01s 9/46

U.S. Cl. 343—7 ED **6 Claims**

Disclosed is a vehicle safety system in which a bistatic Doppler system senses objects in the path of a subject vehicle and

activates a passenger restraint device, such as an inflatable "air-bag" in response thereto. In another preferred embodiment, the Doppler system is combined with mechanical



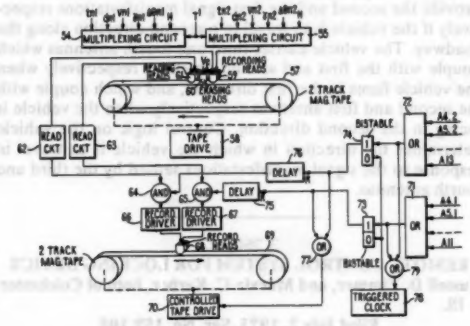
sensing apparatus to deploy the restraint device during lower speed collisions. In addition, a system is disclosed that deploys a passenger restraint device only in response to simultaneous signals from two Doppler systems.

3,760,416

RUNWAY TRAFFIC SURVEILLANCE DEVICE

Georges J. J. Barriere, Le Mesnil-Saint-Denis, and Michel Rene J. Dalbera, Chatillon-Sous-Bagneux, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,748
Claims priority, application France, Nov. 30, 1970, 7042944
Int. Cl. G01s 7/04, 9/42
U.S. Cl. 343—7 ED **10 Claims**



A radar surveillance device particularly adapted for airport surface monitoring, including a fixed pointing monopulse radar and tracking circuits for selected targets. Radar derived data such as data on range, azimuth (bearing) angle, speed in analog or digital form are continuously recorded in a transient (repetitive) recording as, for example, in a continuous belt magnetic tape recorder. A continuous comparison of radar derived data with built-in limits produces an alarm signal whenever one or more of said data items reaches its build-in limit. The alarm signal can alert tower personnel but also activates a transfer of recorded data from the transient (first) to more permanent (second) recording means. In one embodiment, the time retention capacity of the first recording means is used to hold data for one such period preceding an alarm signal, the recording being shifted to the second recorder during the presence of an alarm signal. In another embodiment, a read-out from the first recorder is activated by the alarm signal and the data read-out is recorded in the second recorder so that a complete second recorder record is extant including the data in the holding period of the first recorder one predetermined holding period prior to the alarm.

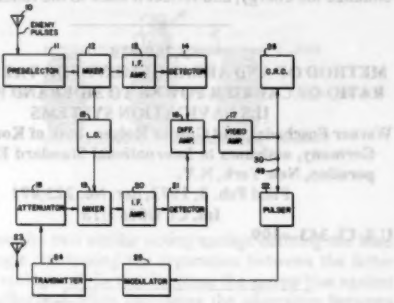
A continuous record for accident investigations and airport traffic monitoring purposes is thus available.

3,760,417

SYNCHRONIZED PULSE JAMMER AND DECOY

Andrew V. Haeff, Washington, D.C., and Franklin H. Harris, Accokeek, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 15, 1946, Ser. No. 641,363
Int. Cl. H04k 3/00
U.S. Cl. 343—18 E **5 Claims**



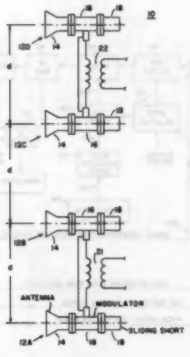
1. A device for rendering enemy radio pulse echo location equipment ineffective comprising radio receiver means for receiving said enemy pulses, interference transmitting means, and delay pulser means connected between said receiving means and said transmitting means and triggered by said received pulses to pulse operate said transmitting means a predetermined time after receipt of an enemy pulse so that the transmitted interference pulse overlaps in time the reception of the next succeeding pulse signal from said pulse echo location equipment, said pulser means including control means responsive to changes which may occur in the repetition rate of said received pulses to automatically readjust said predetermined time.

3,760,418

N-ELEMENT GLINT SIMULATOR

Carlton H. Cash, Hazel Green, and James J. Jernigan, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 17, 1972, Ser. No. 244,687
Int. Cl. G01s 9/02
U.S. Cl. 343—18 E **3 Claims**



A glint simulator is disclosed for receiving and reflecting impinging radar energy to simulate the results of a real target. This allows ready monitoring of a radar response to angle and

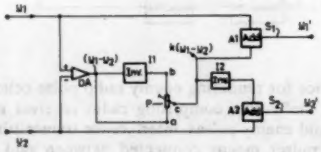
amplitude scintillation error. A single point source of angle scintillation or glint from the simulator may comprise a microwave antenna, a modulator, a noise modulation source and a modulation phase adjustment. Several simulator point sources may be utilized with a single noise modulator to provide a variable multiple-point target. Simulator antennas receive the radar energy, couple it through respective modulators wherein noise modulation may be introduced to reduce or enhance the energy, and reflect it back to the radar.

3,760,419

METHOD OF AND ARRANGEMENT FOR VARYING THE RATIO OF CARRIER POWER TO SIDEBAND POWER IN ILS NAVIGATION SYSTEMS

Werner Poschadel, and Gunter Hofgen, both of Kornwestheim, Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,071
Int. Cl. G01s *1/18*
U.S. Cl. 343—109 **5 Claims**



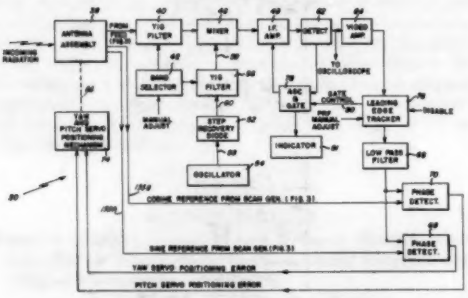
A device for simply and inexpensively controlling the ratio of carrier to sideband power is an ILS ground transmitting station or the like. Two RF outputs are supplied, one providing center antenna excitation and the other providing sideband antenna excitation. The transmitter output stages are amplitude modulated by modified modulation signals which are produced by summing the original modulation tones with adjustable fractions of the difference thereof. A simple potentiometer control provides the adjustment, which controls beam pattern sharpness to accommodate different length runways.

3,760,420

RADIATION SEEKER

Joseph D. Hadad, Andover; Troy E. Plunk, Bedford, and Donald S. Banks, Wellesley, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 22, 1969, Ser. No. 862,636
Int. Cl. G01s *3/42*
U.S. Cl. 343—117 R **10 Claims**



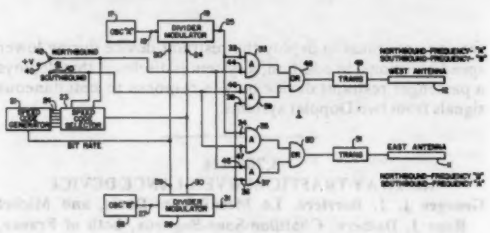
A system for tracking the direction of a source of electromagnetic radiation. The system utilizes an antenna and a receiver responsive to the radiation at both its carrier frequency and at harmonics of the carrier. Tracking at the harmonic frequency can provide increased angular resolution due to the larger ratio of antenna dimension to harmonic wavelength than is provided by tracking at the carrier frequency. The accuracy is similarly increased because of the increased capability for excluding radiation, such as multipath reflected radiation, arriving from other directions.

3,760,421

DIRECTION CONTROL IN A VEHICLE CONTROL SYSTEM

Robert C. Hoyler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1972, Ser. No. 301,018
Int. Cl. B61l *21/10*; H04b *7/00*
U.S. Cl. 343—225 **7 Claims**



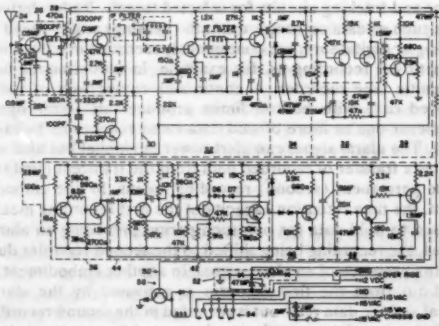
First and second antennas are situated adjacent first and second running surfaces respectively of a vehicle roadway. The first and second antennas provide first and second signal manifestations respectively if a vehicle is to travel in a first direction along the roadway, and the first and second antennas provide the second and the first signal manisfestations respectively if the vehicle is to travel in a second direction along the roadway. The vehicle carries third and fourth antennas which couple with the first and second antennas respectively when the vehicle faces in the first direction, and which couple with the second and first antennas respectively when the vehicle is facing in the second direction. Control logic on the vehicle determines the direction in which the vehicle is to travel in response to the signal manisfestations sensed by the third and fourth antennas.

3,760,422

REMOTE CONTROL SYSTEM FOR LOCKING DEVICE

Russell D. Zimmer, and Marvin C. Kerber, both of Colchester, Ill.

Filed July 2, 1971, Ser. No. 159,105
Int. Cl. H04b *7/00*
U.S. Cl. 343—225 **1 Claim**



A remote control system for automatically controlling actuation of a device, such as a lock, in response to the proximity

of the operator to the device. A portable transmitter providing a coded output is carried by the operator and a receiver is located at the site of the device to be actuated. By utilizing the near radiation field, actuation of the device will occur only when the operator is within a predetermined distance from the receiver.

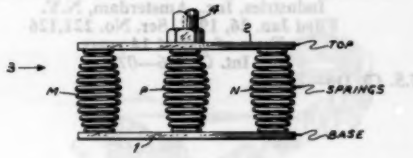
3,760,423

MOBILE ANTENNA MOUNTING ASSEMBLY

John A. Kuecken, Pittsford, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 19, 1972, Ser. No. 254,976
Int. Cl. H01q 1/32
U.S. Cl. 343—715 **8 Claims**

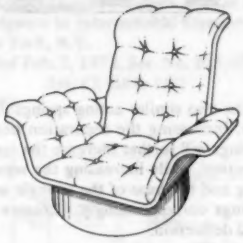
In this self-erecting antenna mounting assembly for mobile applications, the antenna mount/mount plate is attached to a base, which is fixed to or part of a vehicle, solely by a spring arrangement which provides that the antenna (typically a whip) may temporarily deflect aft beneath tree limbs, etc. without damage, while providing a far greater bias in the forward direction for preventing "whipping" from, for example, panic stops, and yet even greater bias for preventing movement to either side resulting from steep, fast turns or skids. The antenna mount is coupled to the base portion by way of three parallel springs arranged end-on threbetween at the apices of an isosceles triangle. The arrangement is such as to provide for a flexing of the two springs defining the base of the triangle and the stretching of the third, positioned forward of the other two, for an aft deflection, while a forward deflection would require the two springs to be stretched while the third is flexed, in giving rise to greater bias. The greatest bias is provided for sideways deflections, by maintaining a broad separation between the two similar acting springs defining the base of the triangle. Increasing the separation between the latter mentioned springs will further increase the spring bias against sideways deflection, while increasing the separation between the third spring and the base of the triangle as defined by the other two springs correspondingly increases the spring bias against forward deflection.



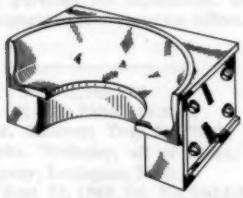
DESIGNS

SEPTEMBER 18, 1973

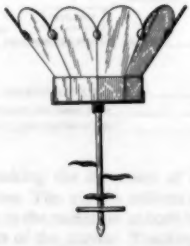
228,371
CHAIR
Don Ray Gill, Sturgis, Mich., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Jan. 26, 1972, Ser. No. 221,126
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—26



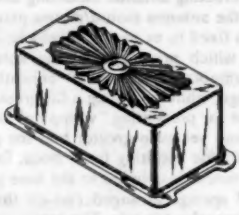
228,372
MOBILE BOOTH
Richard C. Bue and Kermit H. Wilson, Minneapolis, Minn.; said Bue assignor to Sico Incorporated, Minneapolis, Minn.
Filed Jan. 31, 1972, Ser. No. 222,453
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—59



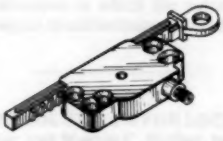
228,373
SOLAR STOVE
Merton L. Clevett, 4685 S. Ogden St., Englewood, Colo. 80110
Filed July 11, 1972, Ser. No. 270,588
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—109



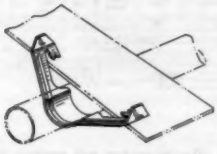
228,374
CONTAINER CLOSURE OR THE LIKE
James B. Swett, 8 Devonshire Drive, Barrington, R.I. 02806, and Jack V. Croyle, 159 Spring St., Woonsocket, R.I. 02895
Filed Feb. 3, 1970, Ser. No. 21,253
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—131



228,375
WINDOW OPERATOR OR SIMILAR ARTICLE
Lyle M. Northrup, New Hampton, Iowa, assignor to Lynor Engineering, Inc.
Filed May 4, 1972, Ser. No. 250,473
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—153



228,376
CONDUIT CLIP
Raymond L. Martz, Palatine, Ill., assignor to Mineralac Electric Company, Chicago, Ill.
Filed June 26, 1972, Ser. No. 247,929
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235

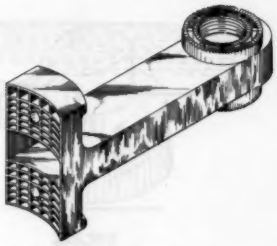


228,377
CONDUIT CLIP
Raymond L. Martz, Palatine, Ill., assignor to Minerallac Electric Company, Chicago, Ill.
Filed June 26, 1972, Ser. No. 247,930
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235

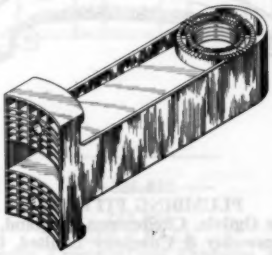
228,378
BOTTLE
Alfred D. Sterges, Los Angeles, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Mar. 27, 1972, Ser. No. 238,727
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42

228,379
BAND RETAINED STAND-OFF MOUNTING
Paul J. Gorishek, East Moline, Ill., assignor to Gulf + Western Industries, Inc., New York, N.Y.
Filed July 26, 1972, Ser. No. 275,245
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234

228,380
BAND RETAINED STAND-OFF MOUNTING
Paul J. Gorishek, East Moline, Ill., assignor to Gulf + Western Industries, Inc., New York, N.Y.
Filed July 26, 1972, Ser. No. 275,280
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234

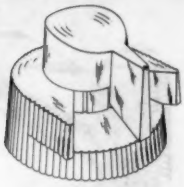


228,381
BAND RETAINED STAND-OFF MOUNTING
Robert R. Snyder, Coal Valley, Ill., assignor to Gulf + Western Industries, Inc., New York, N.Y.
Filed July 26, 1972, Ser. No. 275,282
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234



228,382
BOTTLE
Alfred D. Sterges, Los Angeles, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Mar. 27, 1972, Ser. No. 238,726
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60

228,383
ADJUSTABLE SPRAY RATE ACTUATOR CAP FOR A PRESSURIZED CONTAINER
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Gillette Park, Mass.
Filed May 10, 1972, Ser. No. 252,157
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—258

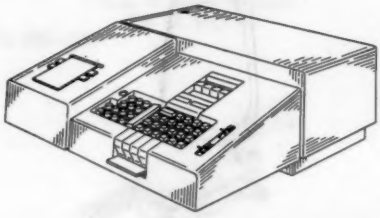


228,384
FISHING LURE
Jack E. Davis, Crescent City, Fla., assignor to Victor Comptometer Corporation, Chicago, Ill.
Filed May 1, 1972, Ser. No. 249,482
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

228,385
PLUMBING FITTING
Kenneth Alan Ogilvie, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England
Filed Aug. 26, 1971, Ser. No. 175,422
Claims priority, application Great Britain Mar. 20, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40

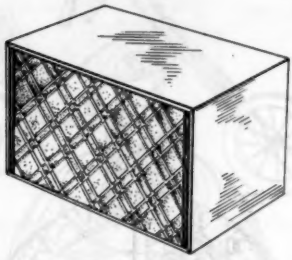
228,386
OIL TESTER
Donald S. Stoakes and Kenneth D. Brock, Minneapolis, Minn., assignors to Thexton Manufacturing Company, St. Louis Park, Minn.
Filed Oct. 6, 1971, Ser. No. 187,213
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1 Q

228,387
DESK-TOP CALCULATOR
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy
Filed Oct. 14, 1971, Ser. No. 189,483
Claims priority, application Italy Apr. 21, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

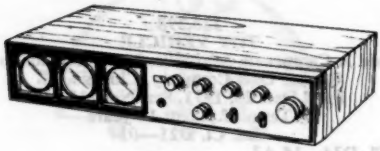


228,388
ELECTRIC LIGHT BULB
Jack N. McCarthy, Meadowood Road, Tolland, Conn. 06084
Filed Oct. 4, 1971, Ser. No. 186,574
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

228,389
UNIDIRECTIONAL SPEAKER
Wilfried Schneider, 59 Perivale Crescent, Scarborough, Ontario, Canada
Filed Dec. 23, 1971, Ser. No. 211,850
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

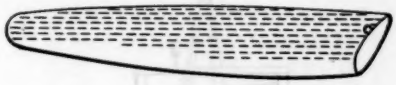


228,390
AMPLIFIER
Kikuo Ohta and Shuhei Taguchi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 7, 1972, Ser. No. 216,329
Term of patent 14 years
Int. Cl. D14—*04*
U.S. Cl. D26—14 L

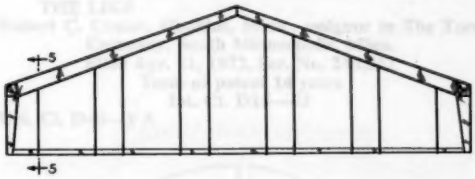


228,391
FISHING LURE
John B. Barritt, Jr., 4349 NW. 13th, Oklahoma City, Okla. 73107
Filed July 12, 1972, Ser. No. 270,979
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

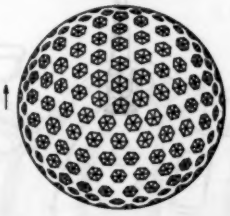
228,392
FISH LURE
James D. Maxwell, 11001 SE. 19th, Vancouver, Wash. 98664
Filed Sept. 5, 1972, Ser. No. 286,018
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



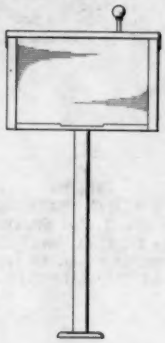
228,393
SUSPENSION POST TRUSS
George E. France, Rte. 2, Box 60, Oswego, Ill. 60542
Filed May 17, 1971, Ser. No. 144,375
Term of patent 14 years
Int. Cl. D25—*02*; D30—*02*
U.S. Cl. D30—2



228,394
GOLF BALL
Frank S. Martin, Cranston, and Thaddeus A. Pietraszek, Barrington, R.I., assignors to Uniroyal, Inc., New York, N.Y.
Filed June 25, 1971, Ser. No. 157,077
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 QQ

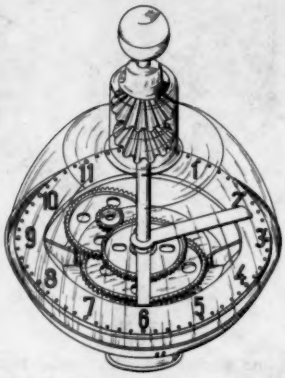


228,395
GOLF BALL AND CLUB WASH STAND
Allyn G. Warren, 10902 Marian Drive, Garden Grove, Calif. 92640, and Douglas S. Warren, 27151 Mission Hills Drive, San Juan Capistrano, Calif. 92675
Filed July 9, 1971, Ser. No. 161,420
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 QQ

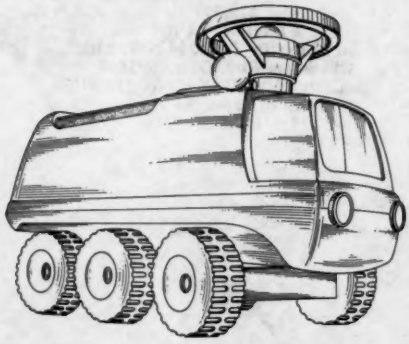


228,396
GOLF PUTTER HEAD
Nicholas A. Cruger, Altamonte Springs, Fla. (205 W. Fairbanks Ave., Winter Park, Orange County, Fla. 32789)
Filed July 19, 1971, Ser. No. 164,185
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

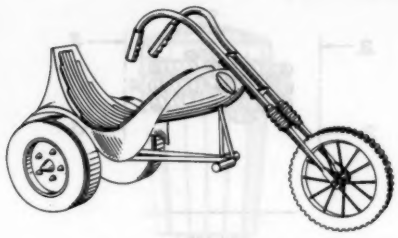
228,397
TOY SPINNING TOP
Peter Balleis, 55 Hermann-Lons-Strasse, Zirndorf, near Nuremberg, Germany
Filed Sept. 24, 1971, Ser. No. 183,725
Claims priority, application Germany July 28, 1971
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 CC



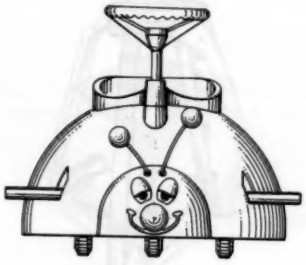
228,398
TOY VEHICLE
Ronald J. Campenell, Martville, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 23, 1971, Ser. No. 211,845
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



228,399
THREE WHEEL JUVENILE VEHICLE
David K. Camfield, Olney, Ill., assignor to AMF Incorporated
Filed Mar. 6, 1972, Ser. No. 232,350
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AL



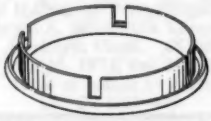
228,400
JUVENILE RIDING VEHICLE
Stanley Martin Novak, Jr., Olney, Ill., assignor to AMF Incorporated
Filed Feb. 25, 1972, Ser. No. 229,617
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



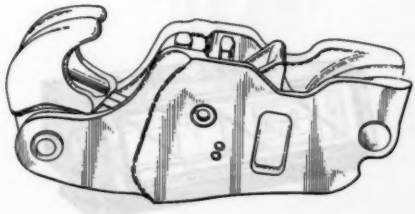
228,401
CHILD'S RIDING VEHICLE
Cecil F. Adickes, Playa Del Rey, Calif., assignor to Samsonite Corporation, Denver, Colo.
Filed Apr. 21, 1972, Ser. No. 246,504
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

228,402
FLOWER POT
Albert Meszaros, 81 Sleepy Hollow Road, North Tarrytown, N.Y. 10591
Filed Aug. 16, 1971, Ser. No. 172,365
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

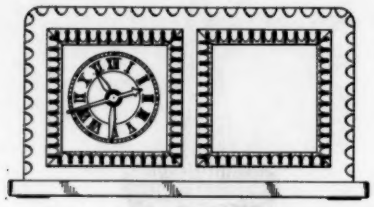
228,403
SAFETY SHIELD FOR MOWERS AND OTHER GROUND TRAVERSING IMPLEMENTS AND THE LIKE
Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, South Minneapolis, Minn.
Filed Apr. 21, 1972, Ser. No. 246,501
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 A



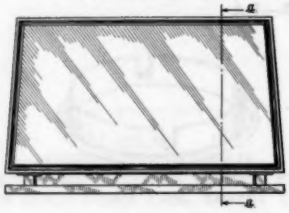
228,404
QUICK RELEASE HOOK
Ian D. Smith, Gardeners Close Kidderminster, England, assignor to Parsons Chain Company Limited, Worcestershire, England
Filed June 19, 1972, Ser. No. 264,306
Claims priority, application Great Britain Dec. 21, 1971
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1 B



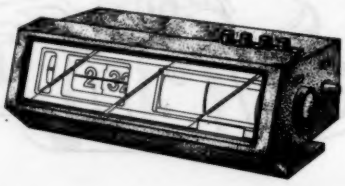
228,405
COMBINED CLOCK AND PICTURE STAND
Leslie N. Pollard, 2050 S. Garnsey, Santa Ana, Calif. 92707
Filed Mar. 30, 1972, Ser. No. 239,856
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



228,406
CLOCK HOUSING
Richard K. Thomas, Elk Grove Village, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Dec. 29, 1971, Ser. No. 213,797
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R

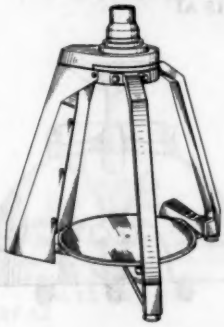


228,407
DIGITAL CLOCK RADIO
Kikuo Ohta, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 2, 1972, Ser. No. 277,196
Claims priority, application Japan Feb. 4, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



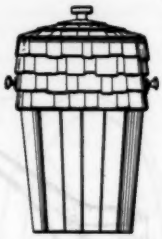
228,408
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Nov. 8, 1971, Ser. No. 196,861
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 A

228,409
SUPPORTING TRIPOD FOR A HOSIERY LINKING MACHINE
Cesare L. Conti, 18 via Varese, 20121 Milan, Italy
Filed Nov. 13, 1970, Ser. No. 25,971
Claims priority, application Italy May 18, 1970
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D47—5

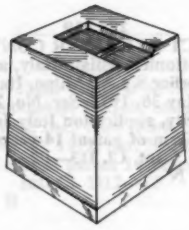


228,410
DESK LAMP
Shoji Ishikawa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed July 12, 1972, Ser. No. 271,327
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F

228,411
WASTE RECEPTACLE
Lester Miller, St. Louis County, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Filed Nov. 8, 1971, Ser. No. 196,860
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D49—35

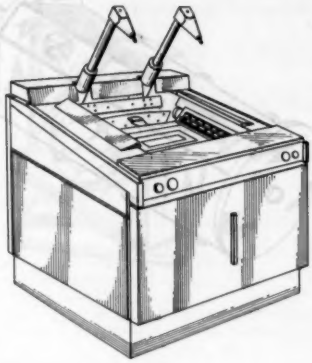


228,412
STAMP DISPENSER
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 19, 1972, Ser. No. 255,314
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D52—2 C



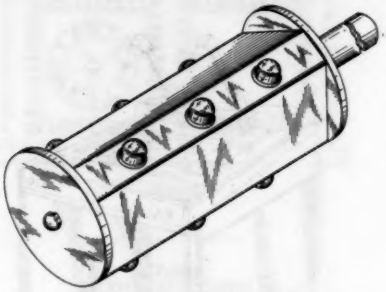
228,413
WEIGHING SCALE
William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, Ill., assignors to Continental Scale Corporation, Chicago, Ill.
Filed Mar. 22, 1972, Ser. No. 237,233
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10 R

228,414
PROCESSING MACHINE FOR PRINTING PLATE REGISTRATION
Hugh T. Greenlee, Gates Mills, Ohio, assignor to W. R. Grace & Co., New York, N.Y.
Filed Nov. 3, 1971, Ser. No. 195,535
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 R

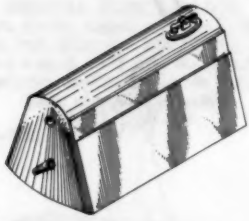


228,415
TRAVERSING HANGER FOR PERSONNEL SLING
Frederick S. Blackall, 4 Vernon St., Hartford, Conn. 06106
Filed May 20, 1971, Ser. No. 145,600
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1 S

228,416
LANTERN FOR INDICATING MACHINERY STATUS
Roland P. Heinrichs, Lindenhurst, N.Y., assignor to Uniwave, Inc., Farmingdale, N.Y.
Filed Nov. 10, 1971, Ser. No. 197,566
Term of patent 14 years
Int. Cl. D29—*99;* D26—*03*
U.S. Cl. D72—1 E

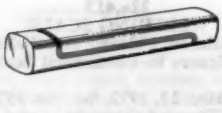


228,417
MULTI-PURPOSE DESK ACCESSORY
Walter Riley, 7955 Riggs Road (No. 9), Adelphi, Md. 20783
Filed July 23, 1971, Ser. No. 165,864
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A

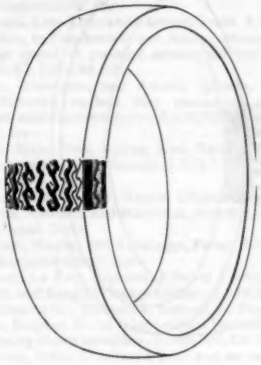


228,418
HOLDER FOR A WRITING INSTRUMENT OR SIMILAR ARTICLE
John E. Locke, Las Vegas, Nev., assignor to Easyriter, Inc. (also known as Easy Graphic Systems, Inc.), Clinton, Ohio
Filed Apr. 1, 1971, Ser. No. 130,564
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

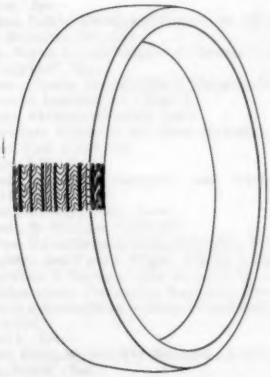
228,419
COMPACT EYE-LINER CONTAINER
Franco Bettonica, Milan, Italy, assignor to Perlier S.p.A., Milan, Italy
Filed May 30, 1972, Ser. No. 258,197
Claims priority, application Italy Jan. 17, 1972
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D86—10 N



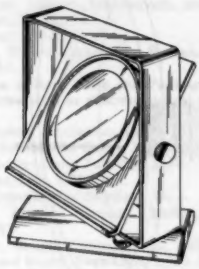
228,420
PNEUMATIC TIRE TREAD AND BUTTRESS
Clarence H. Vizina, Jr., Ferndale, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Feb. 23, 1972, Ser. No. 228,803
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



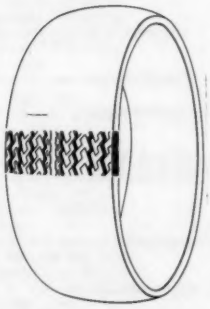
228,421
PNEUMATIC TIRE TREAD AND BUTTRESS
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Jan. 20, 1972, Ser. No. 219,608
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



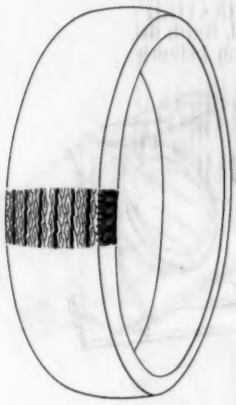
228,422
ILLUMINATING COSMETIC MIRROR
Donald P. Stahl, North Bellmore, N.Y., assignor to Telecommunication Industries, Incorporated, Farmingdale, N.Y.
Filed Dec. 18, 1970, Ser. No. 26,566
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 H



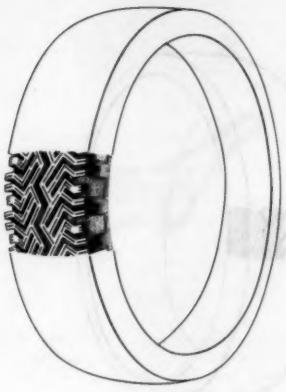
228,423
PNEUMATIC TIRE TREAD AND BUTTRESS
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Jan. 24, 1972, Ser. No. 220,567
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



228,424
PNEUMATIC TIRE TREAD AND BUTTRESS
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Jan. 20, 1972, Ser. No. 219,605
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



228,425
PNEUMATIC TIRE TREAD AND BUTTRESS
Orlin J. Melstrand, Detroit, and James F. Newman, St. Clair Shores, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed July 12, 1972, Ser. No. 270,886
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



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TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF SEPTEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Baranyovits, Francis Leslie Charles; and Masters, Joan Irene, to Imperial Chemical Industries Limited. Combating pests with benzothiadiazines. 3,760,076, Cl. 424-246.000.

Barashkov, Ruslan Yakovlevich: *See—*
Axelrod, Lev Samuilovich; Akatov, Alexandr Vasilievich; Rudenko, Valery Mikhailovich; Fedorov, Viktor Viktorovich; Barashkov, Ruslan Yakovlevich; and Garbuzovsky, Boleslav Iosifovich, 3,759,494.

Baratta, Lucio. Cable tensostructure including stiffening latticed elements. 3,758,905, Cl. 14-19.000.

Barber, Anthony Clifford: *See—*
Woolcock, Alan; McDougall, Ian Leitch; and Barber, Anthony Clifford, 3,760,092.

Bareth, Erich, to Kaltenbach & Voigt. Straight or angle dental handpiece. 3,758,948, Cl. 32-26.000.

Barker, Robert S., to Halcon International, Inc. Catalyst for hydrocarbon oxidation. 3,759,840, Cl. 252-432.000.

Barley, Thomas A.: *See—*
Rast, Gustaf J., Jr.; and Barley, Thomas A., 3,760,256.

Barnes Engineering Company: *See—*
Schwarz, Frank, 3,760,399.

Barnes, Roland O. Rate adaptive nonsynchronous demodulator apparatus. 3,760,412, Cl. 340-347.0dd.

Barnes, Roy J.; and Stroot, Donald H., to Caterpillar Tractor Company. Ejector-type refuse container. 3,759,561, Cl. 294-69.00r.

Barnett, Irvin. Extruded asbestos yarn for paper dryer felts. 3,759,027, Cl. 57-140.0by.

Barone, Frank J.; and Tolliver, Donald L., to Motorola, Inc. Method of forming integrated circuits utilizing low resistance values, low temperature deposited oxides and shallow junctions. 3,759,762, Cl. 148-187.000.

Barrett Electronics Corporation: *See—*
Fernstrom, Henry C., 3,759,403.

Barriere, Georges J. J.; and Dalbera, Michel Rene J., to International Standard Electric Corporation. Runway traffic surveillance device. 3,760,416, Cl. 343-7.0ed.

Barringer, Anthony Rene, to Barringer Research Limited. Method and apparatus for geochemical surveying. 3,759,617, Cl. 356-36.000.

Barringer Research Limited: *See—*
Barringer, Anthony Rene, 3,759,617.

Barrow, Robert B.; Smith, Matthew F.; and Sink, Larry W., to United Aircraft Corporation. Method and apparatus for producing single crystal castings using a consumable electrode. 3,759,310, Cl. 164-52.000.

Barry, Robert J. Method and apparatus for loading trucks. 3,759,405, Cl. 214-38.00d.

Barsby, Noel, to Gibbons Brothers Limited. Kiln cars. 3,759,661, Cl. 432-241.000.

Barth, Gerhard: *See—*
Muize, Heinz; Barth, Gerhard; and Pfuller, Kurt, 3,759,070.

Bartz, Maurice R., to International Business Machines Corporation. Optical data entry and display system. 3,760,373, Cl. 340-172.500.

Bashor, Berl E. Automatic cut-off saw. 3,759,124, Cl. 83-81.000.

Basic Electronics, Inc.: *See—*
Bruels, John F., 3,760,338.

Bass, John R.: *See—*
Kieser, Robert J.; Bass, John R.; and Donovan, John E., 3,760,346.

Bassett, Ronald M.; and Geoth, Joseph F., to Mallory, P. R., & Co., Inc., mesne. Rotor driven timer. 3,759,032, Cl. 58-55.000.

Bassinger, Donald F., to DV Displays Corporation. Emergency vehicular warning system. 3,760,353, Cl. 340-72.000.

Battelle Development Corporation: *See—*
Hildebrand, Bernard P., 3,760,344.

Battersby, William R. Double glazing units and methods of making. 3,759,771, Cl. 156-109.000.

Battes, Robert J. High impedance signal level detector. 3,760,272, Cl. 324-111.000.

Battye, Edwin Amitage: *See—*
Gorwicz, David; Battye, Edwin Amitage; and Wright, James, 3,760,246.

Bau, Werner: *See—*
Salamon, Manfred; Hagebaum, Hans-Jurgen; Wandel, Martin; Muhlhausen, Cornelius; Bau, Werner; and Reinecke, Gerd-Konrad, 3,759,742.

Bauer, Ronald; Chung, Harold; Keim, Wilhelm; and Van Zwet, Henry, to Shell Oil Company. Ethylene polymerization in the presence of complex nickel catalysts containing a glycolic acid, thioglycolic, or thiolactic acid ligand. 3,759,889, Cl. 260-94.90c.

Baumer, Wilhelm: *See—*
Helger, Roland; Hartel, Arnold; Stein, Alfred; and Baumer, Wilhelm, 3,759,374.

Bausch & Lomb Incorporated: *See—*
Van Orden, Lynn L., 3,759,606.

Baxlien, Asbjorn; and Koln, Jan, to ICI Australia Limited. Process for preparing certain 2-iminothiazolidines. 3,759,937, Cl. 260-306.700.

Baxter Laboratories, Inc.: *See—*
Gajewski, Henry Martin; and Growski, Clarence John, 3,759,788.

Baxter, Thomas D. Fluid actuated control valve. 3,759,483, Cl. 251-5.000.

Bay, Theodosios, to Leeds & Northrup Company. Method and apparatus for cement kiln control. 3,759,659, Cl. 432-24.000.

Bayer Aktiengesellschaft: *See—*
Buchel, Karl Heinz; Grewe, Ferdinand; Frohberger, Paul Ernst; and Kaspers, Helmut, 3,760,078.
Carl, Wolfgang; and Wandel, Martin, 3,759,851.
Emmer, Gerhard; Vernaleken, Hugo; Weirauch, Kurt; and Schnell, Hermann, 3,759,865.
Grewe, Ferdinand; Schrader, Gerhard; Kaspers, Helmut; and Meiser, Werner, 3,760,085.
Horstmann, Walter, 3,759,900.
Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.
Kuhlthau, Hans-Peter; and Lehment, Klaus-Friedrich, 3,759,902.
Metzger, Carl; Rucker, Dietrich; and Eue, Ludwig, 3,759,939.
Muschelknautz, Edgar; and Krambrock, Wolfgang, 3,759,578.

Reusche, Wolfgang; and Holtschmidt, Hans, 3,759,975.
Salamon, Manfred; Hagebaum, Hans-Jurgen; Wandel, Martin; Muhlhausen, Cornelius; Bau, Werner; and Reinecke, Gerd-Konrad, 3,759,742.
Schnegg, Robert; Pelousek, Herbert; and Dippelhofer, Robert, 3,759,855.
Winter, Gerhard; Zirngibl, Hans; and Mansmann, Manfred, 3,760,068.

Beal, Philip F., III; and Pike, John E., to Upjohn Company, The. PGA$_2$. 3,759,965, Cl. 260-468.00d.

Bear, Herman G.: *See—*
Prouty, Robert E.; and Bear, Herman G., 3,760,342.

Beard, Thomas N., to Shell Oil Company. Method of producing hydrocarbons from an oil shale formation. 3,759,574, Cl. 299-4.000.

Beard, Walter C. Self-venting vessel. 3,759,414, Cl. 220-44.00r.

Bearings, Seals & Gears, Inc.: *See—*
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Beaucamp, Klaus: *See—*
Bergmeyer, Hans Ulrich; Beaucamp, Klaus; Jaworek, Dieter; and Nelboeck-Hochstetter, Michael, 3,759,596.

Beaulieu, Bryan J.: *See—*
Boler, Leonard J.; Hanssen, Nels S.; Beaulieu, Bryan J.; Cherne, Lloyd G.; and Halvorson, Halvor O., 3,759,495.

Becca, Guiseppe; and Origgi, Robert O. Method for obtaining images on metals. 3,759,753, Cl. 148-6.300.

Becker, Willi, to Pfeiffer, Arthur, Vakuumtechnik GmbH. Bearing arrangement for molecular and turbo molecular pumps. 3,759,626, Cl. 415-90.000.

Beckman Instruments, Inc.: *See—*
Wright, Herschel E.; and Cassingham, William J., 3,759,591.

Beeman, Robert H.; and Tarr, Lloyd A., to GTE Automatic Electric Laboratories, Incorporated. Multi-frequency tone detector. 3,760,269, Cl. 324-78.00d.

Beery, Jack, to Burroughs Corporation. Damping of a step servo motor using one step anticipation logic. 3,760,252, Cl. 318-611.000.

Behrenz, Wolfgang: *See—*
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Bell & Howell Company: *See—*
Badalich, Frank C., 3,759,487.
Kral, Fred G., 3,760,164.

Bell Canada Northern Electric Research Limited: *See—*
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Bell Canada-Northern Electric Research Limited: *See—*
Szpakowski, Bronislaw Tadeusz, 3,760,195.

Bell, Clarence A.; Gwinn, Ralph; Jennison, Rolland N.; Jones, Bryon; and Strauss, Philip W., to Whirlpool Corporation. Defrost control. 3,759,049, Cl. 62-80.000.

Bell Punch Company Limited: *See—*
Drage, James John; and Kitz, Norbert, 3,760,363.

Bell Telephone Laboratories, Incorporated: *See—*
Arnaud, Jacques Alexis, 3,759,590.
Condon, Joseph Henry, 3,760,103.
Coyne, James Christopher, 3,759,335.
Dixon, Melvyn; and Kurtzig, Arjeh Jehuda, 3,759,745.
Harris, Cliff Andrew, 3,760,287.
Harwick, Nathan Everette, III, 3,759,088.
Joel, Amos Edward, Jr., 3,760,110.
Kugelnik, Herwig Werner; and Shank, Charles Vernon, 3,760,292.
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Beloit College: *See—*
Hinckley, John N.; and Stonehocker, Van Tassel, 3,759,640.

Bendall, Wilfrid H. Laminated diaphram couplings. 3,759,063, Cl. 64-11.00r.

Bengel, Thomas G.; and Nicely, Thomas E., to United States Steel Corporation. Seal. 3,759,662, Cl. 432-242.000.

Bennet, Lester H. Receptacle attachment for wheelchair arm. 3,759,569, Cl. 297-194.000.

Bennett, Joseph C.; and Wenzel, Anton, to GTE Automatic Electric Laboratories, Incorporated. Insulated common strip. 3,760,330, Cl. 339-18.00r.

Beregi, Laszlo; Hugon, Pierre; and Le Douarec, Jean-Claude, to Science Union et Cie. Aromatic amino acids and esters thereof. 3,759,979, Cl. 260-471.00a.

Berg Manufacturing Company, The: *See—*
Klimek, Boleslaw, 3,759,584.

Berg, Quentin, to Du Pont de Nemours, E. I., and Company. Terminal method and manufacture. 3,758,944, Cl. 29-630.000.

Berger, Abe; and Selin, Terry G., to General Electric Company. Silyl maleates and polysiloxane maleates. 3,759,968, Cl. 260-448.20q.

Berger, Abe, to General Electric Company. Organosilicon compound with isothiocyanate substituent bonded through divalent bridge. 3,759,969, Cl. 260-448.20n.

Berger, Jenson & Nicholson Limited: *See—*
Arbuckle, Kenneth Harold; and Lazarus, David Mendel, 3,760,033.

Bergmeyer, Hans Ulrich; Beaucamp, Klaus; Jaworek, Dieter; and Nelboeck-Hochstetter, Michael. Arrangement for storing containers. 3,759,596, Cl. 312-108.000.

Bergt, Hans-Eberhard, to Siemens Aktiengesellschaft. Light-sensitive semiconductor device. 3,760,240, Cl. 317-235.00r.

Beriger, Ernst; and Martin, Henry, to Ciba-Geigy AG. S,S-Dialkyl-O-aliphatieoxy alkyl phosphites. 3,760,042, Cl. 260-950.000.

Berke, Philip A.: *See—*
Rosen, William E.; and Berke, Philip A., 3,759,980.

Berkhoodt, Paul G. C. A., to Koninklijke Fabriek Inventum N.V. Oven. 3,759,241, Cl. 126-21.00a.

Berkovits, Barough V.: *See—*
Thaler, Sherwood S.; and Berkovits, Barough V., 3,759,265.

Berkovits, Barouh V.; Denouter, Pieter J.; and Lewis, Edward L., to American Optical Corporation. Pacer connector. 3,760,332, Cl. 339-66.00r.

Berkowitz, Sidney, to FMC Corporation. Production of vinylidene chloride and methyl chloroform. 3,760,015, Cl. 260-658.00r.

Berman, Seymour S. Apparatus for hip dislocation treatment. 3,759,252, Cl. 128-70.000.

Bernacchi, Jerald R.: *See—*
Lutz, Rober Clare; and Bernacchi, Jerald R., 3,760,194.

Bernard, Jean-Pierre, to Compagnie Industrielle des Telecommunications Atalcatel. Device for winding conductor wire on a pin. 3,759,454, Cl. 242-7.060.

Berrer, Dagmar; and Vogel, Christian, to Ciba-Geigy AG. Herbicidal compositions containing 2-chloro-4-tertbutylamino-6-cyclopropylamino-s-triazine and method of use therefor. 3,759,690, Cl. 71-93.000.

Best, John H., & Sons, Inc.: *See—*
Best, Leon H.; and Davis, Robert D., 3,759,396.

Best, Leon H.; and Davis, Robert D., to Best, John H., & Sons, Inc. Display stand. 3,759,396, Cl. 211-47.000.

Bestenreiner, Friedrich; and Deml, Reinhold, to Agfa-Gevaert Aktiengesellschaft. Method of photographic color recording. 3,759,155, Cl. 95-12.200.

Bettcher Industries, Inc., The: *See—*
Bettcher, Louis A., 3,759,170.

Bettcher, Louis A., to Bettcher Industries, Inc., The. Food press. 3,759,170, Cl. 100-42.000.

Beyerle, Rudi: *See—*
Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,759,907.

Bhatt, Pradip: *See—*
Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, 3,759,869.

Bialobrzeski, Walter. Electrical grid. 3,758,980, Cl. 43-112.000.

Bianchetta, Donald L.; and Lohbauer, Kenneth R., to Caterpillar Tractor Company. Hydraulic control valve assembly. 3,759,292, Cl. 137-596.000.

Bianchetta, Donald L., to Caterpillar Tractor Company. Brake saver circuit. 3,759,357, Cl. 192-3.00r.

Bianchi, Giuseppe; and Nidola, Antonio E., to Oronzio de Nora Impianti Elettrochimici S.p.A. Activated graphite. 3,759,842, Cl. 252-447.000.

Biechler, Francois Joseph: *See—*
Martineau, Jean; and Biechler, Francois Joseph, 3,759,847.

Bierlein, John David, to Du Pont de Nemours, E. I., and Company. Optical scanner. 3,760,385, Cl. 340-174.0yc.

Billottet, Henri: *See—*
Narbaits-Jaureguy, Jean Raymond; and Billottet, Henri, 3,760,278.

Bio-Logics, Products, Inc.: *See—*
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,760,159.

Bitran, Munir, to Patelhold Patentverwertungs & Elektro-Holding AG. Electronic counting and storage system having non-interfering counting storage and read-out capability. 3,760,372, Cl. 340-172.500.

Bizerba-Werke Wilhelm Kraut KG: *See—*
Rudle, August; and Striebel, Kurt, 3,759,226.

Black and Decker Manufacturing Company, The: *See—*
Marshall, James W., 3,760,339.
Wells, Kenneth R., 3,759,019.

Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories, Limited. Isothioureas and their derivatives. 3,759,944, Cl. 260-309.000.

Blackley, William D., to Minnesota Mining and Manufacturing Company. Polyimide polymers of benzophenone tetfacarboxylic dianhydrides and saturated aliphatic diamines. 3,759,913, Cl. 260-33.40p.

Blain, William A.: *See—*
Griner, Arthur J.; and Blain, William A., 3,759,650.

Blajda, Raymond S.; and Robin, Kenneth D., to United States of America, Army. Self-obturating, expellable cartridge case. 3,759,184, Cl. 102-38.000.

Blake, Francis R., to Cooper, Peter, Corporation. Tool for use in book binding. 3,758,928, Cl. 29-105.00a.

Blaker, Ivar; Boyum, Oystein; Andreassen, Knut Anton; Lunde, Reidar Skipperud; and Tveten, Kjell Wallin, to Norsk Hydro a.s. Process for the preparation of substantially anhydrous magnesium chloride from magnesium chloride hydrates. 3,760,050, Cl. 264-82.00.

Blakslee, Edward Leroy: *See—*
Landauer, Le Roy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,759,810.

Blanchard, Clarence E.; Turner, Robert K.; and DuBois, Chester, to Outboard Marine Corporation. Fuel feed system. 3,759,493, Cl. 261-23.00a.

Blatz, Robert A., to Handgards, Inc. Disposable probe cover and method for making same. 3,759,370, Cl. 206-16.500.

Blee, Timothy John; Hyde, Lawrence Edward; and Noddings, John, to Associated Engineering Limited. Systems for land vehicles. 3,759,344, Cl. 180-105.00e.

Bleeker, Raymond A.: *See—*
Anderson, William C.; and Bleeker, Raymond A., 3,759,297.
Bleil, Carl E., to General Motors Corporation. Horizontal growth of crystal ribbons. 3,759,671, Cl. 23-301.0sp.
Bleuer, Keith T. Crosslaid fabric. 3,759,782, Cl. 161-57.000.
Bligh, Jack; and Silman, Kenneth Edward, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Rocket motors having angularly movable exhaust nozzles. 3,759,446, Cl. 239-265.35.
Blochlinger, Ernst: *See—*
Steiner, Daniel; and Blochlinger, Ernst, 3,759,567.
Blomberg, Knut Hugo. Switching device for telephone instruments. 3,760,122, Cl. 179-99.000.
Blood, Alden E.: *See—*
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Blum, Dieter: *See—*
Gaeth, Rudolf; Schmitt, Bernhard; and Blum, Dieter, 3,760,047.
Blyer, Siegfried. Apparatus for shaping extrusion-moulded articles made of synthetic plastics material. 3,759,651, Cl. 425-343.000.
Bodenseewerk Geratetechnik GmbH: *See—*
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Boehringer Ingelheim GmbH: *See—*
Weber, Karl Heinz; Zeile, Karl; Dannesberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,760,074.
Boehringer Mannheim G.m.b.H.: *See—*
Stork, Harald; and Schmidt, Felix Helmut, 3,759,793.
Boehringer, Wilfred E.; and Callas, Donald C., to McDonnell Douglas Corporation. Extendible gear axle. 3,759,468, Cl. 244-102.00r.
Boeing Company, The: *See—*
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Boenning, Robert A.; and Nasuta, Anthony T., Jr., to Westinghouse Electric Corporation. Programmable light source. 3,760,174, Cl. 240-1.00r.
Bogert, Robert C.: *See—*
Rudy, Marion F., 3,760,056.
Boggs, Beryl Aaron, to Allied Chemical Corporation. Screw jet pack for textile fibers. 3,759,010, Cl. 53-24.000.
Boggs, Jesse K., to Esso Research and Engineering Company. Alkylation catalyst. 3,760,021, Cl. 260-671.00p.
Boita, Mibai, to Institutul de Cercetari Energetice Industriale si Proiectari Utilaje Energetice. Method of and apparatus for electronically simulating the operating characteristics of a fuel-injection system and for designing same. 3,760,173, Cl. 235-184.00.
Boler, Leonard J.; Hanssen, Nels S.; Beaulieu, Bryan J.; Cherne, Lloyd G.; and Halvorson, Halvor O., to Cherne Industrial, Inc. Liquid aerating rotor assembly. 3,759,495, Cl. 261-92.000.
Bollinger, Frederick W.: *See—*
Conn, John B.; and Bollinger, Frederick W., 3,759,987.
Bon, Charles K.; and Johnson, David R., to Dow Chemical Company, The. Low velocity burner for thermal expansion of particulate solids. 3,759,660, Cl. 432-58.000.
Bonazoli, Robert P.; and Keenan, James P., to Sylvania Electric Products, Inc. Lamp assembly and method of making high silica lamps. 3,759,601, Cl. 316-19.000.
Bonds-Wear Pty. Limited: *See—*
Lee, Harold Barry, 3,759,199.
Bone, Arnold R., to Dennison Manufacturing Company. Apparatus for dispensing fasteners. 3,759,435, Cl. 227-67.000.
Borer, Albert; and Krogseng, Gerald P., to Minnesota Mining and Manufacturing Company. Method of firing dry spun refractory oxide fibers. 3,760,049, Cl. 264-57.000.
Borisenko, Andrei Vladimirovich. Stereophonic sound-reproducing system. 3,759,345, Cl. 181-31.00b.
Borom, Marcus P.: *See—*
Johnson, Lyman A.; and Borom, Marcus P., 3,759,109.
Borom, Marcus P.; and Johnson, Lyman A., to General Electric Company. Combined depth gauge and pneumatic analogue decompression instrument. 3,759,101, Cl. 73-291.000.
Borom, Marcus P.; and Johnson, Lyman A., to General Electric Company. Single gauge multi-time constant and multi-tissue ratio automatic decompression instruments. 3,759,108, Cl. 73-423.00r.
Borowski, Bernard J., to Ferro Corporation. Iron-containing porcelain enamels for self-cleaning cooking oven. 3,759,240, Cl. 126-19.00r.
Bosch, Robert, G.m.b.H.: *See—*
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Boster, Everett E.; and Willis, James E. Towing vehicle. 3,759,407, Cl. 214-86.00a.
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Bostick, John H.; and Bostick, Ivory S., to Lee, Raymond, Organization, Inc., The. Carrier for soiled diapers. 3,759,356, Cl. 190-42.000.
Bouchet, Claude; Meliani, Roger; and Tomasovitch, Vladimir, to International Standard Electric Corporation. Line finder for a common control telephone exchange. 3,760,113, Cl. 179-18.0fg.
Boudouris, Georges; Kalopissis, Gregoire; Levesque, Jean-Luc; and Roussopoulos, Paul, to L'Oreal. Apparatus for treating hair utilizing dielectric losses. 3,760,148, Cl. 219-222.000.
Bourns, Inc.: *See—*
Baldwin, Kenneth B.; and Sullivan, Ronald D., 3,760,324.
Bowe, Bohler & Weber KG: *See—*
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Bowe Bohler & Weber KG, Firma: *See—*
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Bowser, George H., to PPG Industries, Inc. Multiple glazed unit. 3,758,996, Cl. 52-17.200.
Boyd, David M., to Universal Oil Products Company. Control of multi-reaction zones in response to two qualities of product. 3,759,820, Cl. 208-64.000.
Boyd, David M., to Universal Oil Products Company. Reaction zone control. 3,760,168, Cl. 235-151.120.
Boyd, Horace Edward: *See—*
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Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugen, to Copper Range Company. Mining and tunneling apparatus involving alternated application of thermal and mechanical energy and process thereof. 3,759,575, Cl. 299-14.000.
Boyle, John P. Occult illuminator system. 3,759,607, Cl. 350-293.000.
Boyum, Oystein: *See—*
Blaker, Ivar; Boyum, Oystein; Andreassen, Knut Anton; Lunde, Reidar Skipperud; and Tveten, Kjell Wallin, 3,760,050.
Bracke, William J. I. Process for the agglomeration of particulate materials. 3,759,197, Cl. 111-1.000.
Bracke, William J. I., to Lobofina S.A. Cross linking of acrylamide polymers (lab 5). 3,759,857, Cl. 260-29.60h.
Bradford, Alan P.; and Reed, Lee R., to United States of America, Army. Vapor coating using a cam controlled shutter. 3,759,221, Cl. 118-504.000.
Bradley, Gordon Frank; Price, David; and Hamilton, Alexander, to Ciba-Geigy AG. Pigment compositions. 3,759,733, Cl. 106-309.000.
Bradley, William J. Protective coatings containing glass flake pigment and articles coated therewith. 3,759,852, Cl. 260-18.0ep.
Braid, Milton, to Mobil Oil Corporation. Process for dimerizing diarylamines. 3,759,996, Cl. 260-576.000.
Branch, Ethridge S. Pallet skids. 3,759,193, Cl. 108-51.000.
Brandt, Denard A.: *See—*
Van Byken, Harold B., II; and Brandt, Denard A., 3,759,014.
Brastow, Carl H., to Kamborian, Jacob S. Coating machine. 3,759,219, Cl. 118-261.000.
Braun Aktiengesellschaft: *See—*
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Schindler, Hans, 3,760,231.
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Brda, Otto. Multipurpose device for moving persons or loads over a height difference. 3,759,346, Cl. 182-7.000.
Brennan, James A.; Garwood, William E.; and Myers, Harold C., to Mobil Oil Corporation. Catalytic process for upgrading cracked gasolines. 3,759,821, Cl. 208-93.000.
Breslow, David S., to Hercules Incorporated. Polymers modified with sulfonazide-isocyanate compounds. 3,759,878, Cl. 260-78.40e.
Breslow, Jeffrey D.; Glass, Marvin I.; and Burck, Joseph M., to Glass, Marvin, & Associates. Board game apparatus. 3,759,521, Cl. 273-134.00b.
Brew, Jerke R.: *See—*
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Bricker, Melvin E.; and Dugle, Thomas E., to Bricker Products, Inc. Power unit. 3,759,129, Cl. 83-444.000.
Bricker Products, Inc.: *See—*
Bricker, Melvin E.; and Dugle, Thomas E., 3,759,129.
Bridgwater, Anna B.: *See—*
Sax, Sylvan M.; Moore, John J.; and Bridgwater, Anna B., 3,759,794.
Bridle, Kenneth Frederick, to A.B. Electronics Components Limited. Connectors. 3,760,334, Cl. 339-99.00r.
Briggs & Stratton Corporation: *See—*
Tharman, Paul A., 3,760,259.
Brille, Maurice G., to Regie Nationale des Usines Renault. Sealing devices for rotary piston machines. 3,759,638, Cl. 418-128.000.
Bristol-Myers Company: *See—*
Crast, Leonard Bruce, Jr., 3,759,904.
British Petroleum Company, The: *See—*
Davies, Evan Ellis; Elkins, John Stanley; and Pitkethly, Robert Chalmers, 3,759,823.
British Titan Limited: *See—*
Twist, Walter; Holdsbrough, Keith; and Hinley, John James, 3,759,732.
Britt, A. D., to United States of America, Navy. Thermal stabilizers for silicone fluids. 3,759,970, Cl. 260-448.20r.
Brock, Myron R. Bow for stringed instruments. 3,759,131, Cl. 84-282.000.
Broken Hill Proprietary Company, Limited, The: *See—*
Dalli, Alan George; Debenham, Michael; and Shackleford, Ralph Edward, 3,759,206.
Broner, Hans J.: *See—*
Doll, Henri Georges; and Broner, Hans J., 3,759,247.
Bronzini, Bruno. Device for the quick change of toolholders. 3,759,536, Cl. 279-89.000.
Brose, Peter, to Sick, Erwin, Firma. Photoelectric monitoring device for pluralities of threads. 3,760,184, Cl. 250-219.00s.

Broske, William F., to AMP Incorporated. Explosively-formed tubular connection. 3,759,551, Cl. 285-18.000.

Brotherton, Cecil O., to Timesavers, Inc. Belt tensioner for wide belt sanding machines. 3,759,146, Cl. 92-13.600.

Brown & Williamson Tobacco Corporation: *See*—
Thornton, Raymond E., 3,759,267.

Brown Boveri & Company, Limited: *See*—
Loitzl, Rozica; and Schueler, Claus, 3,759,691.

Brown, David Sydney; Ficken, Geoffrey Ernest; and Treherne, Elizabeth Joan, to Ilford Limited. Merocyanine dyestuffs. 3,759,931, Cl. 260-294.80d.

Brown, Gaylord W.; and Adams, Gary A., to Koehring Company. Friction welding machine loading and holding apparatus. 3,759,770, Cl. 156-73.000.

Brown, Ralph A., to Sperry Rand Corporation. Rack mounted electronic module support mechanism. 3,759,475, Cl. 248-277.000.

Bruckert, Eugene J., to Motorola, Inc. Digital pattern detector. 3,760,355, Cl. 340-146.200.

Bruels, John F., to Basic Electronics, Inc. Terminal plug construction. 3,760,338, Cl. 339-196.00m.

Brunborg, Ivar: *See*—
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Bruneau, Alain, to Societe ALPIA. Drawing-board protractor unit. 3,758,953, Cl. 33-79.00r.

Brunswick Corporation: *See*—
North, Irving W.; and Bankstahl, Herbert A., 3,759,041.
Sundberg, Bertil J.; and Luksch, Andreas, 3,759,708.

Bruun, Kai. Furniture wheels. 3,758,918, Cl. 16-44.000.

Bryant, James G., to Bryant-Poff, Inc. Self-cleaning metal trap for rubbish shredding machines. 3,759,452, Cl. 241-82.000.

Bryant-Poff, Inc.: *See*—
Bryant, James G., 3,759,452.

Brzozowski, Stanley F.; Farmer, Alonzo; and Pefferman, William C., to PPG Industries, Inc. Process for treating by-product titanium tetrachloride from pyrogenic TiO_2 production. 3,760,071, Cl. 423-613.000.

Buchanan, Carl S.: *See*—
Kleist, Dale; and Buchanan, Carl S., 3,759,680.

Buchel, Karl Heinz; Grewe, Ferdinand; Frohberger, Paul Ernst; and Kaspers, Helmut, to Bayer Aktiengesellschaft. Fungicidal compositions and method of combating fungi using N-acyl-para-dialkylaminophenyl-hydrazones. 3,760,078, Cl. 424-267.000.

Buchholz, Bernard: *See*—
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Buckton, Keith Stewart; and Fraser, Ian Rowland, to Esso Research and Engineering Company. Fuel system. 3,759,234, Cl. 123-136.000.

Buddemeyer, Bruce D.; and Moneymaker, John R., to Paniplus Company, The. Chemically leavened bakery and confectionary products. 3,759,717, Cl. 99-92.000.

Budych, Irvin; Frey, Laverne Lawrence; and Reefman, William Edward, to Bunker Ramo Corporation. Vibrator structure and method and apparatus for adjusting the frequency thereof. 3,759,133, Cl. 84-457.000.

Bullard, Russell H., to Singer Company, The, mesne. Coil as mount for associated equipment. 3,759,320, Cl. 165-122.000.

Bunker Ramo Corporation: *See*—
Budych, Irvin; Frey, Laverne Lawrence; and Reefman, William Edward, 3,759,133.

Bunker-Ramo Corporation: *See*—
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Bunker-Ramo Corporation, The: *See*—
Cerwin, James Joseph, 3,760,336.
Kehl, Lawrence Joseph; Triner, Irvin Richard; and Janis, Robert Gerald, 3,760,156.
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Trandin, Georgy Gavrilovich; Khrichev, Vladimir Andreevich; Sykalo, Evgeny Petrovich; Burakov, Valery Petrovich; and Krasnobaev, Vasily Iliich, 3,759,166.

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Burgess Vibrocrafters, Inc.: *See*—
Simmons, Frank A., 3,759,020.

Burkett, Wilford B.; and Carlsen, George D., II, to McCulloch Corporation. Electronic watt hour meter. 3,760,273, Cl. 324-142.000.

Burkwall, Morris P., Jr., to Quaker Oats Company. High protein food product. 3,759,714, Cl. 99-14.000.

Burns, Bernard J.: *See*—
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Burns, Eugene A.: *See*—
Meyers, Robert A.; and Burns, Eugene A., 3,759,868.

Burns, Joseph Richard, to RCA Corporation. Semiconductor memory using variable threshold transistors. 3,760,378, Cl. 340-173.00r.

Burns, Robert Vincent, to GTE Automatic Electric Laboratories Incorporated. Coin telephone circuit. 3,760,101, Cl. 179-6.30r.

Burr-Brown Research Corporation: *See*—
Graeme, Jerald G., 3,760,199.

Burris Industries, Incorporated: *See*—
Korch, Benning, 3,759,571.

Burroughs Corporation: *See*—
Beery, Jack, 3,760,252.

Burroughs, Robert S.; and Forbes, F. Douglas, to Hughes Aircraft Company. Adjacent CATV channel jamming. 3,760,097, Cl. 178-5.100.

Burtis, Wilson A., to Crane Co., mesne. Tubing flaring tool. 3,758,932, Cl. 29-200.00b.

Busch, John Edward, to GTE Automatic Electric Laboratories Incorporated. Party and coin detection arrangement for a communication switching system. 3,760,112, Cl. 179-17.00a.

Bush, Paul S. Containers and their construction. 3,759,412, Cl. 220-7.000.

Buzzard, Robert J., to Coherent Radiation. Anode for a discharge tube. 3,760,213, Cl. 313-39.000.

Byars, James A.: *See*—
Desaulniers, Anthony T.; and Byars, James A., 3,758,925.

Byk-Gulden Lomberg Chemische Fabrik GmbH: *See*—
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Caberlotto, Giovanni, to Calzaturificio Caber S.p.A. Ski boot. 3,758,965, Cl. 36-2.5al.

Cagen, George, to Ideal Toy Corporation. Doll which tears only in horizontal position. 3,758,983, Cl. 46-135.00a.

Calame, Jean Pierre: *See*—
Siddall, John B.; and Calame, Jean Pierre, 3,759,964.

Calcagno, Benedetto; Piccolo, Luigi; and Ghirga, Marcello, to Societa' Italiana Resine S.p.A. Process for preparing aluminum trichloride. 3,760,066, Cl. 423-496.000.

California Computer Products, Inc.: *See*—
McCune, Clarence G.; Vincer, John C.; and Graves, Kenneth E., 3,759,442.

Callahan, Joseph R. Mounting jig for electrical outlet boxes. 3,759,505, Cl. 269-98.000.

Callas, Donald C.: *See*—
Boehringer, Wilfred E.; and Callas, Donald C., 3,759,468.

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Cam Technology, Inc.: *See*—
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Camiciottoli, Roberto; and Grossi, Giuseppe Telecommunicazioni, to Societa Italiana Telecommunicazioni S.p.A. System for the remote supervision of multichannel PCM repeaters. 3,760,127, Cl. 179-175.30r.

Campbell, James K., to Dow Chemical Corporation. Process for binding pigments to glass fabrics. 3,759,740, Cl. 117-126.0gs.

Canadian Wire Brush Co.: *See*—
Maltarp, Allan M., 3,758,908.

Cannizzaro, Joseph R.; and Emery, Charles F., to International Business Machines Corporation. Multilayer circuit board. 3,760,091, Cl. 174-68.500.

Canon Kabushiki Kaisha: *See*—
Saito, Takashi; and Iida, Toshihide, 3,759,220.
Saito, Takashi; and Ando, Yujiro, 3,760,152.

Caplick, Daniel J.; Marra, Frank; and Sprenger, Gerhard E., to Sun Chemical Corporation. Radiation-curable compositions comprising an isocyanate-modified polyfunctional ester and a photoinitiator. 3,759,809, Cl. 204-159.230.

Caputo, William R.; and Ostrander, William M., to Westinghouse Electric Corporation. Elevator system. 3,759,350, Cl. 187-29.00r.

Carborundum Company, The: *See*—
Economy, James; and Nowak, Bernard E., 3,759,870.
Good, Harper W., 3,759,451.
Marin, Glenn R., 3,759,353.
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Aguirre, Jose-Maria Sistiaga; Diaz, Marcelino Torralba; Arribas, Juan-Jose Regidor; and Caride, Miguel Abalie, 3,759,752.

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Kamborian, Jacob S.; and Caris, Costa, 3,758,904.

Carl, Wolfgang; and Wandel, Martin, to Bayer Aktiengesellschaft. Flame-resistant textile fabrics. 3,759,851, Cl. 260-17.400.

Carley, Jay L.: *See*—
Lohne, William E.; Montgomery, John R.; Carley, Jay L.; Darling, Richard; and Smith-Vaniz, William R., 3,760,161.

Carlsen, George D., II: *See*—
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Carlson, Clarence J.: *See*—
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Carlson, Jerome Albert, to Bearings, Seals & Gears, Inc. Memory disc drive spindle. 3,759,592, Cl. 308-187.000.

Carlsson, Hilding Ake Gerry, to Aktiebolaget Bahso Ventilation. Automization burners. 3,759,657, Cl. 431-170.000.

Carnes, James D., to Halliburton Company. Internally catalyzed well consolidation. 3,759,327, Cl. 166-295.000.

Caron, Claude; and Hurtado, Jean, to Soletanche Societe Anonyme. Method of earth wall construction using cementitious betonitic mud. 3,759,044, Cl. 61-35.000.

Carondelet Foundry Company: *See*—
Culling, John H., 3,759,704.

Carson, Kenneth C., to Honeywell Inc. Thermoferrite switch with pic resistor temperature compensation. 3,760,310, Cl. 335-146.000.
Carter, Earl J.: *See—*
Zeski, Stephen J.; and Carter, Earl J., 3,758,915.
Carter, James B., Limited: *See—*
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Carter, Melvin A.; and Steinke, Theodore D., to Kaiser Aluminum & Chemical Corporation. Process and system for pumping molten metal. 3,759,635, Cl. 417-50.000.
Carter, Ned C.: *See—*
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Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,859,168.
Carter, Raymond Charles, to Hepworth Plastics Limited, mesne. Pipe couplings. 3,759,553, Cl. 285-260.000.
Carter, Raymond Charles, to Hepworth Plastics Limited, mesne. Pipe couplings. 3,759,554, Cl. 285-260.000.
Caruso, Richard. Hair curler. 3,759,271, Cl. 132-33.00g.
Casa, Angelo Della: *See—*
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Peter, Richard; Angliker, Hans-Joerg; and Casa, Angelo Della, 3,759,958.
Peter, Richard; Angliker, Hans-Joerg; and Casa, Angelo Della, 3,759,959.
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Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
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Catalano, Antoinette: *See—*
Stier, Barrie J.; Ferrara, Peter J.; and Klobas, Ivan (said Ferrara assor. to said), 3,759,480.
Caterpillar Tractor Company: *See—*
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Caterpiller Tractor Company: *See—*
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Cattanach, John, to Mobil Oil Corporation. Preparation of aromatics. 3,760,024, Cl. 260-673.000.
Cavalla, John F.; Sandison, Gillian M.; and White, Alan C., to Wyeth, John, & Brother Limited. Acetylenically unsaturated diaryl nitriles and derivatives thereof. 3,759,906, Cl. 260-247.000.
Celanese Corporation: *See—*
Forschirm, Alex S., 3,759,665.
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Cerberus AG: *See—*
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Certain-Teed Saint Gobain Insulation Corporation: *See—*
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Chalk, David L., to Armco Steel Corporation. Chromium-containing alloy steel and articles. 3,759,705, Cl. 75-124.000.
Chalmers, Alexander Michael; and Randell, Donald Richard, to Ciba-Geigy Corporation. Piperidine derivatives as stabilizers. 3,759,926, Cl. 260-293.900.
Champoin Home Builders Company: *See—*
MacDonald, Robert D., 3,759,600.
Chang, Hsu; and Fan, George J., to International Business Machines Corporation. Magnetic bubble domain system using multiple magnetic sheets. 3,760,387, Cl. 340-174.0tf.
Chang, Wen-Hsuan; Dowbenko, Rostyslaw; and Makhlouf, Joseph M., to PPG Industries, Inc. Polyester powder coating compositions. 3,759,854, Cl. 260-21.000.
Chapman, Dennis R.; and Paterson, William Crawford, to Courtaulds Limited. Electrolytic treatment of filamentary carbon material. 3,759,805, Cl. 204-130.000.
Charamel, Pierre, to Gerin, Merlin. Electric current collecting system. 3,760,128, Cl. 191-49.000.
Chase, Harold E., 5/50% to Cox, Marion, 5/50% to Dunigan, Walter C., 5/50% to Parker, Alfred Browning, 4/50% to Golson, Malcolm, 1/20% to McKeown, Robert R. and 1/20% to Preston, Elizabeth. Disposable refrigerated container that can be refilled, reused or ecycled. 3,759,060, Cl. 62-294.000.
Chasen, Lee Richard: *See—*
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Cherne Industrial, Inc.: *See—*
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Cherne, Lloyd G.: *See—*
Boler, Leonard J.; Hanssen, Nels S.; Beaulieu, Bryan J.; Cherne, Lloyd G.; and Halvorson, Halvor O., 3,759,495.
Cherubim, Martin; and Abodagga, Faisal, to Deutsche Texaco Aktiengesellschaft. Preparation of bicyclical lactams. 3,759,925, Cl. 260-293.550.
Cherubim, Martin; and Dagga, Faisal Abo, to Deutsche Texaco Aktiengesellschaft. Manufacture of 2,6-dialkyl-3-substituted-6-(beta-cyanoethyl)-cyclohexene-(2)-one and products. 3,759,973, Cl. 260-464.000.
Chevron Research Company: *See—*
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Childs, Edmund; and Ostrowski, Raymond, to KLM Company, The. Molding apparatus for making thermoformed articles. 3,759,652, Cl. 425-388.000.
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Chisholm, Douglas S.: *See—*
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Chong, Victor Manuel, to Sun Research and Development Co. Use of thermal regenerator pair in sodium recovery process. 3,759,703, Cl. 75-66.000.
Chonin, Ito J., to Spectra-Mat, Inc. Thermionic cathode. 3,760,218, Cl. 313-346.00r.
Chovanec, John J.; and Hildebrant, Floyd J., to United States of America, Army. Electrostatic spark ignition sensitivity test apparatus and method. 3,760,262, Cl. 324-32.000.
Chow, Sui-Wu: *See—*
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Christin, Georges Etienne, to Etablissements Bertrand Faure. Slides especially for vehicle seats. 3,759,587, Cl. 308-6.00r.
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., to Texaco Inc. Secondary oil recovery method. 3,759,326, Cl. 166-275.000.
Christophers, John Roland: *See—*
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Christophers, John Roland; and James, Derek, said James assor. to said Christophers, John Roland. Apparatus for simulating the playing of golf strokes. 3,759,528, Cl. 273-176.0fa.
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Chung, Harold: *See—*
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Robison, Michael Mullen; and Finch, Neville, 3,759,933.
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Cincinnati Time Recorder Company, Inc.: *See—*
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Ciraudon, Raymond, to Rhone-Poulenc S.A. Thiazolidine derivatives. 3,759,938, Cl. 260-300.700.

Cities Service Company: *See—*
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Roth, Shirley H., 3,759,741.

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Clark, Claud W. Hygenic appliance. 3,759,254, Cl. 128-79.000.

Clark Equipment Company: *See—*
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Clark, Marion A. Variable speed lever action bicycle drive. 3,759,543, Cl. 280-236.000.

Cleereman, Kenneth J.: *See—*
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Clemens, Robert W., to Wesco Industries Corporation. Filament feeding and storage device. 3,759,455, Cl. 242-47.120.

Clifford, Joseph, to Robertshaw Controls Company. Thermal operator for ignition proving system. 3,759,654, Cl. 431-66.000.

Cloyd, Harold S., to Nosce Plastics, Incorporated. Pail. 3,759,415, Cl. 220-60.000.

Cluett, David G. Anchor. 3,759,212, Cl. 114-208.000.

CMI Corporation: *See—*
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Coates, Clarence A., Jr.; and Weaver, Max A., to Eastman Kodak Company. Benzothiazolyl-azo-indole compounds. 3,759,895, Cl. 260-158.000.

Coats & Clark, Inc.: *See—*
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Cobb, Jack M. Method and apparatus for storing cutting implements. 3,759,594, Cl. 312-31.000.

Cochran, Charles C. Reversible cycle ice maker. 3,759,048, Cl. 62-73.000.

Cochran, Michael D., to Tektronix, Inc., mesne. Calculator with a number processing system. 3,760,370, Cl. 340-172.500.

Cogar Corporation: *See—*
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Coherent Radiation: *See—*
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Cohn, Seymour B., to United States of America, Army. Slot line. 3,760,304, Cl. 333-73.00r.

Cohn, Seymour E., to United States of America, Army. Slot line. 3,760,302, Cl. 333-73.00r.

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Coller, Frederick L.: *See—*
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Collings, Robert F.: *See—*
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Collins, George Thomas. Printed circuit card test unit. 3,760,261, Cl. 324-73.00r.

Collins, Leland F.; Quinn, Robert C.; and Wilhelmsen, Paul G., to Shell Oil Company. Preparation of sulfur slurries for pipeline transportation. 3,759,836, Cl. 252-309.000.

Colton, Lewis Henry. Method of and apparatus for imparting twist to yarns. 3,759,024, Cl. 57-34.0hs.

Comer, Robert C., to Toro Company, The. Mower safety shield. 3,759,023, Cl 56-320.100.

Compact Industries, Inc.: *See—*
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Compagnia Italiana Westinghouse Freni e Segnali: *See—*
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Compagnie Generale des Etablissements Michelin: *See—*
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Compagnie Industrielle des Telecommunications Atalcatel: *See—*
Bernard, Jean-Pierre, 3,759,454.

Compret N.V.: *See—*
Cox, John William, 3,759,514.

Compteurs-Schlumberger: *See—*
Volkovisky, Victor V., 3,760,187.

Computervision Corporation: *See—*
Denis, Richard L., 3,759,613.

Condon, Joseph Henry, to Bell Telephone Laboratories, Incorporated. Bidirectional storage crosspoint matrices for mirror image time division switching systems. 3,760,103, Cl. 179-15.0aq.

Conklin, Paul W., to Addressograph-Multigraph Corporation. Branding apparatus and method. 3,759,172, Cl. 101-7.000.

Conn, John B.; and Bollinger, Frederick W., to Merck & Co., Inc. Preparation of 5-fluoro-2-methyl-1-(p-methyl-sulfinylbenzylidene)-3-indenyl acetic acid. 3,759,987, Cl. 260-515-a.

Connelly, Eugene B., to United States Steel Corporation. Inside flash bead trimmer apparatus for welded metal pipe having alternately remotely positionable flash bead cutters. 3,759,140, Cl. 90-24.00b.

Connely, Ralph R., Jr. Mobile theater-type classroom. 3,758,995, Cl. 52-8.000.

Connors, John J., to Westinghouse Electric Corporation. Coarse-fine analog positioning system. 3,760,249, Cl. 318-592.000.

Conradty, C.: *See—*
Koziol, Konrad; and Zenk, Baptist, 3,759,812.

Consolidated Papers, Inc.: *See—*
Schliesman, Leonard J., 3,759,744.

Constantine, Neil V., to International Bakerage; a div. of International Consolidated, Inc. Container. 3,759,416, Cl. 220-97.00f.

Continental Can Company, Inc.: *See—*
Frankenberg, Henry E., 3,759,203.
Stanley, Thomas R.; and Mascia, Carmen T., 3,759,427.

Continental-Wirt Electronics Corporation: *See—*
Lifson, Burton S., 3,760,323.

Conveyancer Limited, mesne: *See—*
Gorwicz, David; Battye, Edwin Amitage; and Wright, James, 3,760,246.

Cooke, Richard C., Jr.: *See—*
Merrill, Duane F.; and Cooke, Richard C., Jr., 3,759,867.

Cooksley, Ralph D., to Tagh, Inc. Gas fired fluid heating apparatus. 3,759,230, Cl. 122-156.000.

Coon, Clifford L.; Hill, Marion E.; and Ross, Donald L., to United States of America, Navy, mesne. 2,2-Bis(difluoramino)-5-fluoro-5,5-dinitrol-1-pentanol. 3,759,998, Cl. 260-584.00r.

Cooper Industries, Inc.: *See—*
Simmons, Roger Cleary; Boyd, Horace Edward; and Kuchling, Peter Mathis, 3,758,938.

Cooper, McDougall & Robertson Limited: *See—*
Lee, Ronald Harvey David Frank, 3,759,425.

Cooper, Peter, Corporation: *See—*
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Coors, Adolph, Company: *See—*
Werth, Elmer D.; Sipe, Nelson E.; and Carlson, Clarence J., 3,759,373.
Werth, Elmer D., 3,759,378.

Coors Container Company: *See—*
Maytag, John Hardy, 3,759,142.

Coover, Harry W., Jr.; and Fassett, David W., to Eastman Kodak Company. Surgical method. 3,759,264, Cl. 128-334.00r.

Cope, Geoffrey Wilton, to Dresser Industries, Inc. Housed draft gear. 3,759,400, Cl. 213-22.000.

Copland, George V.; and Gass, Edward W., to Halliburton Company. Oil field production automation method and apparatus. 3,760,362, Cl. 340-172.500.

Copper Range Company: *See—*
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugen, 3,759,575.

Corey, Albert E.; and Donermeyer, Donald D., to Monsanto Company. Acid-modified poly(vinyl acetate-vinyl propionate) textile sizes. 3,759,858, Cl. 260-29.6ta.

Corman, Edward M.: *See—*
Balzer, Claude P.; Reiff, Almer A.; and Corman, Edward M., 3,759,000.

Cornelius Company, The, mesne: *See—*
Swick, George E., Jr., 3,759,599.

Cornella, Emanuel; and Cornella, Thomas E. Building construction of spaced panels with weather seals. 3,759,002, Cl. 52-270.000.

Cornella, Thomas E.: *See—*
Cornella, Emanuel; and Cornella, Thomas E., 3,759,002.

Corning Glass Works: *See—*
Forker, Ray B., Jr.; and Lawless, William N., 3,760,325.

Cotton, Herbert John Thomas, to Lucas, Joseph, (Industries) Limited. Wiring connection to a brush assembly in a dynamo electric machine. 3,760,211, Cl. 310-242.000.

Coulson, Dale Robert, to Du Pont de Nemours, E. I., and Company. Exo-3-methyltricyclo(4.2.1.0,2,5)nona-3,7-dienes and their preparation from allene and a bicyclo (2.2.1)hepta-2,5-diene. 3,760,016, Cl. 260-666.0py.

Coulter Electronics, Inc.: *See—*
Hogg, Walter R., 3,760,281.

Courtaulds Limited: *See—*
Chapman, Dennis R.; and Paterson, William Crawford, 3,759,805.

Covington, Morris T., to Taft Broadcasting Corporation, mesne. Method and apparatus for delaying an electrical signal. 3,760,280, Cl. 328-55.000.

Cowles, Walter C.: *See—*
Iarossi, Frank J.; and Cowles, Walter C., 3,759,209.

Cox, John William, to Compret N.V. Resilient push-pull exerciser. 3,759,514, Cl. 272-83.00r.

Cox, Lyndon S.; and Spyropoulos, Chris E., to United States of America, Army. Supersonic flow deflector and silencer. 3,759,134, Cl. 89-14.00d.

Cox, Marion: *See—*
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Coyne, James Christopher, to Bell Telephone Laboratories, Incorporated. Mule hammer-cycle control. 3,759,335, Cl. 173-91.000.

Crager Industries, Inc.: *See—*
Richter, Roy E., 3,759,576.

Crane Co., mesne: *See*—
Burtis, Wilson A., 3,758,932.
Crane, William B., Jr. Automatic plant watering device. 3,758,987, Cl. 47-38.100.
Crast, Leonard Bruce, Jr., to Bristol-Myers Company. 7-[D-(a-amino-a-phenyl-2,thienyl and 3-thienylacelamido-3-]s-(1,2,3-triazole-5-yl) thiomethyl[-3-cephenic-4-carboxylic acids and salts thereof. 3,759,904, Cl. 260-243.00c.
Cray, Charles A. Human male appliance. 3,759,253, Cl. 128-79.000.
Creators Limited: *See*—
Kent, Cecil, 3,759,004.
Creger, Paul E.; and Neuklis, Winifred A., to Parke, Davis & Company. Esters of 2,2-dimethyl-5-(aryloxy)-1-pentane. 3,759,986, Cl. 260-488.0cd.
Cress, Steven B.: *See*—
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Critchfield, Frank E.; and Koleske, Joseph V., to Union Carbide Corporation. Graft copolymers of lactone polyesters. 3,760,034, Cl. 260-874.000.
Critchley, John Edward: *See*—
Thompson, Joseph; Hemming, Raymond Charles; Critchley, John Edward; and Morrell, Ronald Joseph, 3,760,104.
Croan, Kenneth F. Artificial honeycomb for collecting and recovering honey. 3,758,896, Cl. 6-10.000.
Crone, John M., Jr.: *See*—
Arkell, Alfred; Crone, John M., Jr.; and Suggitt, Robert M., 3,760,017.
Suggitt, Robert M.; Arkell, Alfred; and Crone, John M., Jr., 3,760,018.
Crone, John M., Jr.; and Arkell, Alfred, to Texaco Inc. Hydroalkylation catalyst and process. 3,760,019, Cl. 260-668.00f.
Crooks, Thomas E. Yieldable body jousting bags. 3,759,515, Cl. 273-1.00r.
Croon, Ingemar Liss-Albin: *See*—
Samuelson, Hans Olof; and Croon, Ingemar Liss-Albin, 3,759,783.
Cross, William Telford; Steel, Margaret Lilian; and Trueman, Stephen Edward, to Imperial Chemical Industries Limited. Bag with tear strip. 3,759,439, Cl. 229-66.000.
Crouzet: *See*—
Jullien-Davin, Jean, 3,759,173.
Jullien-Davin, Jean, 3,760,129.
Crowley, Duane E.; Hoffmann, Roy M.; and Roberts, Evan D. Fluid treating device. 3,759,284, Cl. 137-268.000.
Crown Zellerbach Corporation: *See*—
Ott, Dale M.; and Riba, Imants, 3,759,580.
Csanady, Michael, Jr.; Sloan, Joseph; and Goldsborough, Cornelius S., Jr., to Westinghouse Electric Corporation. Lubrication system. 3,759,347, Cl. 184-6.00r.
Culling, John H., to Carondelet Foundry Company. Corrosion-resistant alloys. 3,759,704, Cl. 75-122.000.
Cunningham, Hugh: *See*—
Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,759,813.
Curley, John L.: *See*—
Nibby, Chester M., Jr.; Manton, John C.; Curley, John L.; and Franklin, Benjamin S., 3,760,379.
Current, Wayne A., to Singer Company, The. Sewing machine cabinet. 3,759,595, Cl. 312-27.000.
Currie, James R.: *See*—
Nola, Frank J.; Currie, James R.; and Reid, Harry, Jr., 3,760,248.
Curry, John D., to Procter & Gamble Company, The. Preparation of phosphine oxides by catalytic oxidation of tertiary phosphines. 3,760,000, Cl. 260-606.50p.
Curtis, George. Self-propelled bobber. 3,758,975, Cl. 43-26.100.
Cuscurida, Michael; and Kmiecik, James Edward, to Jefferson Chemical Company, Inc. Purification of isocyanates. 3,759,971, Cl. 260-453.0sp.
Cushing, Charles J.; and Schwind, Kurt C., to Philco-Ford Corporation. Flaw detection and marking apparatus. 3,759,620, Cl. 356-200.000.
Cushing, Vincent J. Electromagnetic water current meter. 3,759,097, Cl. 73-194.0em.
Cutter Laboratories, Inc.: *See*—
Thompson, Charles R.; and Hidalgo, John, 3,760,077.
Cutters Machine Company, Inc.: *See*—
Pearsall, Samuel H.; and Witthauer, Norman E., Jr., 3,760,250.
Czarnecki, Stephen J.; Evers, Harry G.; Kellogg, Frank; Newcum, William W.; Vogel, Richard F.; and Woodward, John W., to GTE Automatic Electric Laboratories Incorporated. Electromechanical common control crosspoint telephone switching system. 3,760,117, Cl 179-18.0ge.
Czekay, Arno; Kramer, Bruno; and Weiden, Hans. Process for the manufacture of impact resistant thermoplastic moulding materials. 3,759,863, Cl. 260-33.6aq.
Czewski, Robert L.; and Gross, Robert S., to General Electric Company. Transformer core assembly. 3,760,316, Cl. 336-210.000.
Dagga, Faisal Abo: *See*—
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Dahlgren, Jan-Ake: *See*—
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Daigle, Norman O.: *See*—
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Dailey, Jack R.; Kuntzleman, Harry C.; and Mitchell, George E., to International Business Machines Corporation. Vector information shifting array. 3,760,368, Cl. 340-172.500.
Daimler-Benz Aktiengesellschaft: *See*—
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Dainippon Ink & Chemicals, Inc.: *See*—
Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, 3,760,037.
Dainippon Ink and Chemicals, Incorporated: *See*—
Fujii, Mitsuru; and Narusawa, Izumi, 3,759,194.
Dainippon Ink Institute of Chemical Research: *See*—
Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, 3,760,037.
Dalbera, Michel Rene J.: *See*—
Barriere, Georges J. J.; and Dalbera, Michel Rene J., 3,760,416.
D'Alea, Anthony R., to Trico Products Corporation. Windshield washer system having submerged air driven pump. 3,759,290, Cl. 137-565.000.
Dalli, Alan George; Debenham, Michael; and Shackleford, Ralph Edward, to Broken Hill Proprietary Company, Limited, The. Push-in easy-open closures. 3,759,206, Cl. 113-121.00c.
Daly, Patrick J.; Grogg, William E.; Layman, Stuart F.; Orlando, Harold J.; Perry, James E.; and Van Derlaske, Dennis P., to United States of America, Army. Universal viewer for far infrared. 3,760,181, Cl. 250-83.30h.
D'Amato, Salvatore F.: *See*—
Gazzola, Ivaldo; D'Amato, Salvatore F.; and Foote, Chauncey P., 3,759,177.
Damon Corporation: *See*—
Bannister, John D.; Coller, Frederick L.; and De Santis, Italo J., 3,759,667.
D'Andrea, Robert A. Aquariums. 3,759,223, Cl. 119-5.000.
Danesi, Wilbert P.: *See*—
Hockin, John; Lund, Carl H.; and Danesi, Wilbert P., 3,759,707.
Dann, Bert H., to International Video Corporation. Self-oscillating limiter. 3,760,197, Cl. 307-237.000.
Dannesberg, Peter: *See*—
Weber, Karl Heinz; Zeile, Karl; Dannesberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,760,074.
Darling, Richard: *See*—
Lohne, William E.; Montgomery, John R.; Carley, Jay L.; Darling, Richard; and Smith-Vaniz, William R., 3,760,161.
Darlington, William B.: *See*—
Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,759,813.
Darrow, John O. G., to Westinghouse Electric Corporation. Fail-safe level detector. 3,760,192, Cl. 307-235.00r.
Data-Control Systems, Inc.: *See*—
Ginn, David W., 3,760,354.
Datron Systems, Inc.: *See*—
Zimet, Robert A.; and Bain, James B., 3,760,311.
Datwyler, Fritz: *See*—
Magerle, Rudolf; and Datwyler, Fritz, 3,760,402.
Davenport, Lonnie Reynolds, to Pair-X Inc., mesne. Method and apparatus for mending knit fabric. 3,759,068, Cl. 66-1.000.
Davidson, William E., to General Electric Company. Fast start spray iron. 3,758,969, Cl. 38-77.500.
Davies, Evan Ellis; Elkins, John Stanley; and Pitkethly, Robert Chalmers, to British Petroleum Company, The. Hydrocarbon conversion with platinum-second-metal catalysts in proportions which form ordered alloys. 3,759,823, Cl. 208-138.000.
Davies, Robert Dillwyn; and Weston, Leslie Yarnall, Jr., to Du Pont de Nemours, E. I., and Company. Apparatus for perforating thermoplastic sheet materials with an electric arc. 3,760,153, Cl. 219-384.000.
Davis, Carl B. Electrical actuated chance device having chain-driven rotatable drums. 3,759,525, Cl. 273-143.00r.
Davis, Charles J., to Case, J. I., Company. Hydraulic angle dozer. 3,759,110, Cl. 74-99.000.
Davis, Harry T., to Hood Sailmakers, Inc. Sail guide system. 3,759,210, Cl. 114-105.000.
Davis, John Walter, to Dunlop Holdings Limited. Braking systems. 3,759,581, Cl. 303-13.000.
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., to Bio-Logics, Products, Inc. Encoding and verifying information. 3,760,159, Cl. 235-61.60r.
Davis, Robert D.: *See*—
Best, Leon H.; and Davis, Robert D., 3,759,396.
Dawson, Harry J.; Hoftiezer, Wallace A.; Keedy, David E.; Mangus, Ervin E.; Patton, Eugene K.; and Grandfield, Joseph P., to Caterpillar Tractor Company. C-flow stacked plate heat exchanger. 3,759,323, Cl. 165-166.000.
Dayton Steel Foundry Company, The: *See*—
Walther, William D.; and Deregnaucourt, Robert A., 3,759,307.
De Carlo, Joseph P. Window cleaning apparatus. 3,759,621, Cl. 401-10.000.
De Castelet, Gaetan De Coye, to Regie Nationale des Usines Renault. Corrosion-resistant ornamental chromium plating. 3,759,802, Cl. 204-41.000.
De Cat, Arthur Henri; and Manssens, Leo Hypoliet, to Gevaert-Agfa N.V. Method for the preparation of 2-alkyl substituted thiazoles and selenazoles. 3,759,935, Cl. 260-298.000.
De Fossey, Bernard Mathieu, to Roussel-UCLAF. Novel treatment of wounds. 3,760,073, Cl. 424-243.000.
De Graffenreid, Howard T.; and May, Clifford H. Mandrel for winding thereon material. 3,759,459, Cl. 242-72.100.
De La Rue Instruments Limited: *See*—
Whitehead, James; and Jenkins, Stuart McEwen, 3,760,158.

de Lavenne, Hubert; and Leger, Andre, to Automobiles Peugeot and Regie Nationale des Usines Renault. Window wiper in particular for a vehicle windscreen. 3,758,911, Cl. 15-250.230.

De Santis, Italo J.: *See—*
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De Thomas, Waldo R.: *See—*
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De Wachter, Anna Maria: *See—*
Van Kamp, Harmen; and De Wachter, Anna Maria, 3,759,960.

Dean, John William, to General Electric Company. Multiple sequence block copolymers of silicones and styrene. 3,760,030, Cl. 260-827.000.

Debenham, Michael: *See—*
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Decker, Donald L., to Stauffer Chemical Company. Process of forming upholstery. 3,759,776, Cl. 156-309.000.

Defour, Jean-Marie, to Angenuex-CIB S.A. Double-lever brake control for bicycles. 3,759,114, Cl. 74-489.000.

Delaney, Edward A.: *See—*
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Demag Aktiengesellschaft: *See—*
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Deml, Reinhold: *See—*
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Dence, Donald S., to Clark Equipment Company. Control valve for hydrostatic drive. 3,759,295, Cl. 137-625.470.

Denis, Richard L., to Computervision Corporation. Photoplotter cassette. 3,759,613, Cl. 355-73.000.

Denk, Joseph P.: *See—*
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Dennison Manufacturing Company: *See—*
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Denouter, Pieter J.: *See—*
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Deregnaucourt, Robert A.: *See—*
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Derungs, Romano, to Hoffmann-La Roche Inc. Quinoxalines. 3,759,912, Cl. 260-250.00r.

DeSantis, Charles M.; and Gottfried, Arthur H., to United States of America, Army. Traveling wave device providing prebunched transverse-wave beam. 3,760,219, Cl. 315-3.500.

Desaulniers, Anthony T.; and Byars, James A. Apparatus for sensing slubs carried by yarn. 3,758,925, Cl. 28-64.000.

Desilets, Dennis W., to Standard Alliance Industries. Anti-back-up device for work carriers on power- and free-conveyor systems. 3,759,189, Cl. 104-172.00s.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Bader, Erich; and Koert, Hubert, 3,759,774.

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Cherubim, Martin; and Abodagga, Faisal, 3,759,925.
Cherubim, Martin; and Dagga, Faisal Abo, 3,759,973.

DeVoghel, Raymond, to Glaverbel. Device for supporting sheet materials. 3,759,397, Cl. 211-50.000.

DeVos, Ferdinand Allard; and Steege, Jan Hendrik Terter, to N.V. Werkspoor-Amsterdam. Method and apparatus for the seamless engraving of half-tone printing plates. 3,760,098, Cl. 178-6.60b.

DeWall, Richard A. Perfusion safety valve. 3,759,289, Cl. 137-525.000.

Dewhirst, Kenneth C., to Shell Oil Company. Rhodium halide complex catalyst compositions. 3,759,838, Cl. 252-429.00r.

Dewhurst, Bert F. Meat slicing machine. 3,759,128, Cl. 83-411.00r.

Di Piazza, Learco: *See—*
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Di Vincenti, Angelo D. Dental floss holder and dispenser. 3,759,272, Cl. 132-92.00r.

Diamond, Julius; Douglas, George H.; and Burns, Bernard J., to Rorer, William H., Inc. 1-Substituted biguanides. 3,759,994, Cl. 260-565.000.

Diamond Shamrock Corporation: *See—*
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Diaz, Marcelino Torralba: *See—*
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Dibonaventura, Alfred R.; and Ford, Leroy H., Jr., to Linemaster Switch Corporation, The. Safety foot control. 3,759,115, Cl. 74-512.000.

Dick, Lyonell P.: *See—*
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Dickore, Karlfried; and Eue, Ludwig. Triazolo triazinones. 3,759,910, Cl. 260-249.500.

Diener, Arnulf; and Kutscher, Horst, to Hoesch Aktiengesellschaft. Process for refining metal melts by supersonic oxygen blow. 3,759,700, Cl. 75-60.000.

Dietz, Raymond Louis; and McFadden, Allan L., to Owens-Illinois, Inc. Coatings. 3,759,727, Cl. 106-49.000.

Dill, Hans G. Three phase rotating ring display with multistator windings. 3,760,410, Cl. 340-378.00r.

Dille, Roger M.; and Schlinger, Warren G., to Texaco Inc. Synthesis gas production by partial oxidation. 3,759,837, Cl. 252-373.000.

Dillenschneider, Jean-Paul, to Compagnie Generale des Etablissements Michelin. Copolymerization of a conjugated diene with a vinyl aromatic compound. 3,759,919, Cl. 260-83.700.

Dillinger, Lester L. Portable power driven surface finishing device. 3,758,994, Cl. 51-241.00s.

Dilo, Richard. Method of making a tubular needled web. 3,758,926, Cl. 28-72.20r.

Dilworth, Thomas E., Jr., to United States of America, Army. Hinge. 3,758,919, Cl. 16-163.000.

Dimeler, Glenn R.: *See—*
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DiNunzio, Vittorio: *See—*
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Dislich, Helmut; Hinz, Paul; and Kaufmann, Reinhard, to Jenaer Glaswerk Schott & Gen. Process for the manufacture of multi-component substances. 3,759,683, Cl. 65-134.000.

Dixon, Melvyn; and Kurtzig, Arjeh Jehuda, to Bell Telephone Laboratories, Incorporated. Hydrogen annealing of substituted magnetic garnets and materials so produced. 3,759,745, Cl. 117-237.000.

Djeu, Nicholas I.: *See—*
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Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; and Chasen, Lee Richard, to Coats & Clark, Inc. Pull knob assembly with interchangeable plug inserts. 3,758,920, Cl. 16-121.000.

Doctor, Hyman, to R.D.T. International Inc. Preparation of perfumes and similar products. 3,759,806, Cl. 204-158.00r.

Doelman, Jan; and Van Meurs, Hubrecht C. A., to Shell Oil Company. Process for the preparation of solid urea adducts. 3,759,818, Cl. 208-25.000.

Doerr, Richard L.; and Fuzesi, Stephen, to Olin Corporation. Durable textile soil release agent. 3,759,664, Cl. 8-115.600.

Dohanich, George J.: *See—*
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Dolveck, Gilbert. Process for making metallic hollow articles. 3,759,205, Cl. 113-120.00h.

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Donovan, John E.: *See—*
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Dougherty, Carle T. Wading pontoons. 3,758,898, Cl. 9-310.00d.

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Dow chemical Company, The: *See—*
Asadorian, Arthur A.; Langer, Horst G.; and Funsher, Jeffrey A., 3,760,003.
Bon, Charles K.; and Johnson, David R., 3,759,660.
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Gum, Wilson F., Jr.; and Nelson, David A., 3,760,013.
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Schrenk, Walter J.; Chisholm, Douglas S.; Cleereman, Kenneth J.; and Alfrey, Turner, Jr., 3,759,647.
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Dowbenko, Rostyslaw: *See—*
Chang, Wen-Hsuan; Dowbenko, Rostyslaw; and Makhlouf, Joseph M., 3,759,854.

Dowell, Frederick S.; and Healy, Benedict P., to Dunlop Limited. Brake disc structure. 3,759,354, Cl. 188-218.0xl.

Downing, Charles, to Mobil Oil Corporation. Method of defoliating cotton plants using phosphate esters of 3-hydroxy-1,2,5-thiadiazoles and derivatives thereof. 3,759,688, Cl. 71-71.000.

Downing, James H., to Union Carbide Corporation. Process for making ferrosilicon. 3,759,695, Cl. 75-10.000.

Drage, James John; and Kitz, Norbert, to Bell Punch Company Limited. Calculating machines with a copy routine. 3,760,363, Cl. 340-172.500.

Dragerwerk Aktiengesellschaft: *See—*
Wachter, Karl-August; and Rabenecker, Horst, 3,759,106.
Draper, Ralph M., to Albany International Corporation. Collapsible dye tube. 3,759,461, Cl. 242-118.110.
Drayton, Frank J., Jr., to Veilean Laboratories Inc. Water conditioning system. 3,759,387, Cl. 210-98.000.
Dreher, Adolf, to Bosch, Robert, G.m.b.H. Coiled filter element and method of manufacturing the same. 3,759,391, Cl. 210-494.000.
Dresser Industries, Inc.: *See—*
Cope, Geoffrey Wilton, 3,759,400.
Dreyfus, Russell W.; and Hornberger, William P., to International Business Machines Corporation. Synthesis of photochromic sodalite by a diffusion process. 3,760,063, Cl. 423-328.000.
Droste, Theodore Carl, to Klipfontein Organic Products Corporation, Limited. Process for the production of neutral calcium hypochlorite crystals. 3,760,064, Cl. 423-474.000.
Du Pont de Nemours, E. I., and Company: *See—*
Berg, Quentin, 3,758,944.
Bierlein, John David, 3,760,385.
Coulson, Dale Robert, 3,760,016.
Davies, Robert Dillwyn; and Weston, Leslie Yarnall, Jr., 3,760,153.
Friend, Lindsay C., 3,760,340.
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McGuire, Thomas Michael, 3,759,963.
Moulds, Gordon M., 3,760,054.
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Duerdoth, Winston Theodore; Hughes, Charles Joseph; Hesketh, John Frederick; and Morton, William Desmond, to Postmaster General, Her Majesty's. Time disivion multiplex communication systems. 3,760,107, Cl. 179-15.0by.
Duerdoth, Winston Theodore; and Hughes, Charles Joseph, to Postmaster General, Her Majesty's. Crosspoint error detection in time division multiplex switching systems. 3,760,115, Cl. 179-18.0gf.
Duffy, Michael C.; Riseman, Jacob; and Wu, Bevan P. F., to International Business Machines Corporation. Coated semiconductor structures and methods of forming protective coverings on such structures. 3,760,242, Cl. 317-235.00r.
Dugle, Thomas E.: *See—*
Bricker, Melvin E.; and Dugle, Thomas E., 3,759,129.
Dumas, William V., to General Electric Company. Laminates. 3,759,779, Cl. 156-331.000.
Dunham-Bush, Inc.: *See—*
Schaefer, Donald D.; and North, James R., Sr., 3,759,636.
Dunigan, Walter C.: *See—*
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Dunlop Limited: *See—*
Dowell, Frederick S.; and Healy, Benedict P., 3,759,354.
Dunn, Howard E., to Phillips Petroleum Company. Amide-nickel salt complexes used as olefin oligomerization catalyst. 3,760,027, Cl. 260-683.15d.
Dunn, William R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,760,239.
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DuRose, Arthur H.; and Stern, Robert L., to Kewanee Oil Company. Alkaline nickel plating solutions. 3,759,803, Cl. 204-49.000.
DV Displays Corporation: *See—*
Bassinger, Donald F., 3,760,353.
Dwyer, James L.; Paine, Richard A.; and Souza, Charles W., to Millipore Corporation. Laminated sheet for electrophoresis. 3,759,773, Cl. 156-280.000.
E-Systems Incorporated, mesne: *See—*
Reynolds, Robert S.; and Nordberg, Svein T., 3,760,360.
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Judkins, Thomas E.; and Roles, David Jack, 3,759,001.
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Coover, Harry W., Jr.; and Fassett, David W., 3,759,264.
Harvey, Donald M., 3,759,614.
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Robinson, Alfred G.; Blood, Alden E.; and Hagemeyer, Hugh J., Jr., 3,760,011.
Easton, Donald Bannerman James; Rennie, George Kerr; and Storer, Christopher Charles, to Lever Brothers Company. Detergent compositions. 3,759,833, Cl. 252-95.000.
Eckl, Robert; and Janson, Klaus Walter, to Bowe Bohler & Weber KG, Firma. Device and method for forming an accordion pile from a continuous web using an air current parallel to the web. 3,759,506, Cl. 270-69.000.
Economy, James; and Nowak, Bernard E., to Carborundum Company, The. Polyesters based on hydroxybenzoic acids. 3,759,870, Cl. 260-47.00c.
Edes, Ferenc; and Gianatasio, Henry L., to Air-Frol Systems, Inc. Web-guiding apparatus and position-sensing and control unit therefor. 3,759,457, Cl. 242-57.100.
Edmore Tool and Ginding, Inc.: *See—*
Hundey, Doran J.; and Naru, Robert B., 3,759,624.
Egermayer, George W. Billboard. 3,758,972, Cl. 40-125.00k.
Eggmatic Corporation: *See—*
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Ehlers, Kenneth W.; Kunkel, Wulf B.; and Baker, William R., to United States of America, Atomic Energy Commission. High current plasma source. 3,760,225, Cl. 315-111.000.
Ehlinger, Arnold H., to Allis-Chalmers Corporation. Compressor assembly. 3,759,627, Cl. 415-178.000.
Einhorn, Ruediger: *See—*
Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; and Chasen, Lee Richard, 3,758,920.
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Eirich, Wilhelm Adolf; and Eirich, Gustav Josef. Method of forming granules. 3,760,051, Cl. 264-117.000.
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Elliott, Eldon G. Magnetic article sorting apparatus. 3,759,367, Cl. 198-41.000.
Elliott, Herbert; and Simons, Frank A., to Dow Chemical Company, The. Apparatus for removal of coolant from metal surfaces. 3,758,913, Cl. 15-38.000.
Ellsworth, James P.; and Wallace, James B., to Westinghouse Electric Corporation. Enclosed device with cover interlock switch. 3,760,132, Cl. 200-50.00a.
Elmatic Corporation: *See—*
Whitehead, George B., 3,760,327.
Eloranta, Vaito K.; and Ruggles, Benjamin C., to Polaroid Corporation. System for uniformly coating exposed motion picture film with processing fluid. 3,759,609, Cl. 352-72.000.
Emerson, Carl D.; and Aichenegg, Paul C., to Chemagro Corporation. Polyhalo disulfide alcohols and derivatives. 3,760,002, Cl. 260-608.000.
Emery, Charles F.: *See—*
Cannizzaro, Joseph R.; and Emery, Charles F., 3,760,091.
Emery Industries, Inc.: *See—*
Rhodes, Philip H.; and Ahr, Robert L., 3,759,856.
Emhart Corporation: *See—*
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Trahan, Albert J., 3,759,686.
Emmer, Gerhard; Vernaleken, Hugo; Weirauch, Kurt; and Schnell, Hermann, to Bayer Aktiengesellschaft. Process for the production of polycarbonate solutions. 3,759,865, Cl. 260-33.80r.
Emmett, John Colin: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,759,944.
Encinas, Juan, to U.S. Philips Corporation. Prevention of autodoping during the manufacturing of a semiconductor device. 3,759,760, Cl. 148-175.000.
Endo, Kunio, to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha. Electrical fuel injection control system for internal combustion engines. 3,759,231, Cl. 123-32.0ea.
Engebrecht, Ronald H.: *See—*
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Engineered Products, Inc. (EPI): *See—*
Vance, Lawrence T., 3,758,997.
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Gayot, Jean, 3,759,187.
English, William A.; and Young, Robert R., to Westinghouse Electric Corporation. Room air conditioner having compressor with variable capacity and control therefor. 3,759,057, Cl. 62-196.000.
Entripose: *See—*
Tamboise, Maurice Paul Jean Joseph, 3,759,006.
Entron, Inc.: *See—*
Ross, Joseph I.; and Sears, Kay G. (said Sears assor. to said), 3,760,130.
Epoch Company Ltd.: *See—*
Matsumoto, Teruo, 3,758,961.
Epple, Richard R., to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor device having a rectifying junction surrounded by a Schottky contact. 3,760,241, Cl. 317-235.00r.
Epstein, Philip L., to Quinder Electronics, Inc. Crystal controlled variable frequency oscillator. 3,760,290, Cl. 331-40.000.
Equitable Equipment Company, Inc.: *See—*
Keeney, Cecil M., 3,759,208.
Erb Plastics, Inc.: *See—*

Erb, William B., 3,758,889.
Erb, William B., to Erb Plastics, Inc. Shock absorging safety helmet. 3,758,889, Cl. 2-3.00b.
ERCO Industries Limited: *See—*
Rapson, William Howard, 3,760,065.
Erdman, Donald C.: *See—*
McFaul, Howard J.; Erdman, Donald C.; and Friedmann, Evan B., 3,759,090.
Erickson, Gerald L.; Jaszkowiak, David A.; and Kaveckis, Joseph E., to United States of America, Atomic Energy Commission. Sensing element response time measuring system. 3,759,083, Cl. 73-1.00f.
Ermakov, Boris Nikolaevich; and Kurilenko, Viktor Georgievich. Ferrite material. 3,759,832, Cl. 252-62.630.
Ertel, Hartmut; and Frisch, Peter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the recovery of antimony pentachloride from catalyst solutions. 3,760,059, Cl. 423-87.000.
Eschler, Hans, to Siemens Aktiengesellschaft. Acousto-optical light deflector having increased band width and short access time. 3,759,603, Cl. 350-161.000.
Eskijian, Luther. Wet film thickness gauge. 3,758,957, Cl. 33-169.00r.
Eskola, Kai; and Tyllinen, Yrjo, to Oy E. Sarlin AB. Method and device for protecting a pump motor intended to be immersed in liquid. 3,759,634, Cl. 417-32.000.
Espana, Salvador; and Funt, Brunson Bert, to McCulloch Corporation. Method for applying hard facing to an object. 3,760,141, Cl. 219-77.000.
Essex International, Inc.: *See—*
Prouty, Robert E.; and Bear, Herman G., 3,760,342.
Esso Research and Engineering Company: *See—*
Boggs, Jesse K., 3,760,021.
Buckton, Keith Stewart; and Fraser, Ian Rowland, 3,759,234.
Iarossi, Frank J.; and Cowles, Walter C., 3,759,209.
Lahn, Gerard, 3,759,676.
Marks, Alfred F., 3,759,991.
Metrailer, William J.; and Welch, Robert C. W., 3,759,697.
Estes, James W.: *See—*
Geiger, Lewis J., Jr.; and Estes, James W., 3,759,699.
Estkowski, Michael H., to V-M Corporation. Record changer spindle. 3,759,531, Cl. 274-10.00s.
Estvan, Charles, Jr. Game pieces selectively joinable along edges thereof to form letters or numerals. 3,759,526, Cl. 273-157.00r.
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Etes, Donald E.: *See—*
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Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,760,044.
Eurenius, Jimmie Arne: *See—*
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European Atomic Energy Community (Euratom): *See—*
Herzberger, Peter; and Di Piazza, Learco, 3,760,144.
Evans, Rubert V.; Stiles, Thomas M.; and Ploeger, Kenneth C., to Rupert Manufacturing Company, Inc. One piece triangular signal device. 3,759,214, Cl. 116-63.00p.
Evers, Harry G.: *See—*
Czarnecki, Stephen J.; Evers, Harry G.; Kellogg, Frank; Newcum, William W.; Vogel, Richard F.; and Woodward, John W., 3,760,117.
Evers-Euterneck, Ernst T., to United States of America, Army. Cruise control for non-ballistic missiles by a special arrangement of spoilers. 3,759,466, Cl. 244-3.210.
EXI Erzeugung von Sportbekleidung Gesellschaft m.b.H.: *See—*
Selzer, Eric Georg, 3,758,890.
Exner, Jurgen H.; Sheetz, David P.; and Steiner, Edwin C., to Dow Chemical Company, The. Cyclic polyethers as catalyst activators in the alkalicatalyzed reaction of alkylene oxides. 3,760,005, Cl. 260-615.000.
Ezaki, Akira: *See—*
Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.
Fabiano, Anthony J. Garden kaddy. 3,759,538, Cl. 280-47.350.
Fabregat, Manuel Punsola. Manufacture of a wiping or piston ring. 3,758,929, Cl. 29-156.600.
Fabricius, John H.; and Maher, John P., to Sprague Electric Company. Concentric shaft encased variable electronic component. 3,760,321, Cl. 338-134.000.
Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,759,331.
Fahn, Rudolf, to Sud-Chemie AG. Clay-mineral-bearing suspensions. 3,759,729, Cl. 106-90.000.
Fair-Conn., Inc.: *See—*
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Fait Societa per Azioni: *See—*
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Falcuta, Persiu, to Grupul Industrial Pentru Foraj si Extractia Titeiului Bucuresti. Cementing float shoe. 3,759,281, Cl. 137-68.000.
Falk, Mervin L.; and Denk, Joseph P., to Newell Industries Inc. Tape transport apparatus with end of tape sensing control. 3,759,462, Cl. 242-186.000.
Falkum, Einar; and Brunborg, Ivar, to Norsk Hydro-Electrisk Kvaelstofaktieselskab. Method for the introduction of hydrocarbon oils into an electric submerged arc furnace. 3,759,696, Cl. 75-11.000.
Fammler, Karl, to Rheinmetall G.m.b.H. Automatic firearm disposed in a gun turret and pivotable in the vertical direction. 3,759,136, Cl. 89-33.0bb.
Fan, George J.: *See—*
Chang, Hsu; and Fan, George J., 3,760,387.
Fancher, Llewellyn W.; and Kalbeeld, Jules, to Stauffer Chemical Company. Process of manufacturing organo-phosphorous derivatives. 3,759,949, Cl. 260-326.00e.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,759,839.
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Farmer, Alonzo: *See—*
Brzozowski, Stanley F.; Farmer, Alonzo; and Pefferman, William C., 3,760,071.
Farr, Emory W. Linear load cell bridge including a non-linear strain sensitive element. 3,759,093, Cl. 73-141.00a.
Farrington, Floyd G. Debeaking, vaccinating and culling wheel and panel for poultry. 3,759,229, Cl. 119-97.00r.
Farrow, Vernon J. Dual propulsion tricycle. 3,759,339, Cl. 180-27.000.
Fassett, David W.: *See—*
Coover, Harry W., Jr.; and Fassett, David W., 3,759,264.
Fausel, Charles A.; and Lorenz, Allan C., to Teletype Corporation. Digitizer. 3,758,949, Cl. 33-1.00m.
Fedorov, Viktor Viktorovich: *See—*
Axelrod, Lev Samuilovich; Akatov, Alexandr Vasilievich; Rudenko, Valery Mikhailovich; Fedorov, Viktor Viktorovich; Barashkov, Ruslan Yakovlevich; and Garbuzovsky, Boleslav Iosifovich, 3,759,494.
Felicetta, Vincent F.; and King, Ellis Gray, to Georgia-Pacific Corporation. Fractionation by gel permeation. 3,759,826, Cl. 210-31.00c.
Fenn, Lawrence E.; and Sperry, Charles R. Electric cigar lighter with thermostatic bimetallic current control. 3,760,150, Cl. 219-265.000.
Ferneau, Richard H., to Weil, Burt. Multi-level one-man cart. 3,759,565, Cl. 296-20.000.
Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of a palladium catalyst. 3,759,839, Cl. 252-431.00c.
Fernstrom, Henry C., to Barrett Electronics Corporation. Storage system. 3,759,403, Cl. 214-16.40a.
Ferrara, Peter J.: *See—*
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Ferro Corporation: *See—*
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Wolf, Charles B.; Fey, Maurice G.; and Azinger, Frederick A., Jr., 3,760,151.
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Ficken, Geoffrey Ernest: *See—*
Brown, David Sydney; Ficken, Geoffrey Ernest; and Treherne, Elizabeth Joan, 3,759,931.
Field, Gregory A., to Sand R Associates, Inc. Sliding wedge cleat. 3,758,922, Cl. 221-115.00r.
Fielding, Francis L.; and Fletcher, Irving L., to International Telephone and Telegraph Corporation. Activity display. 3,760,413, Cl. 343-5.0sc.
Filper Corporation: *See—*
Lane, William A.; and Meissner, Konrad E., 3,759,122.
Finch, Neville: *See—*
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Finck Paint & Chemical Company: *See—*
Smith, Howard F., 3,759,751.
Finley, Mary E. Chair-bath. 3,758,894, Cl. 4-185.00r.

Finnegan, Joseph F., Jr., to York Stone & Supply Company. Masonry flute rake. 3,758,945, Cl. 30-172.000.

Firestone Tire & Rubber Company, The: *See—*
Floros, John C., 3,759,879.

First National City Bank, mesne: *See—*
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Fischel, Edward, to Bodenseewerk Geratetechnik GmbH. Meridian gyroscopic instrument. 3,758,952, Cl. 33-324.000.

Fischer, Artur: *See—*
Fischer, Artur; and Muller, Jean-Nicolas (said Muller assor. to said), 3,759,257.

Fischer, Artur; and Muller, Jean-Nicolas, said Muller assor. to said Fischer, Artur. Connector for fractured tubular bones. 3,759,257, Cl. 128-92.0bc.

Fishel, Kenneth R., to United States of America, Navy. Differential pressure transducer and readout for sensing claw grip force. 3,759,092, Cl. 73-141.00r.

Flack, Bernard, to Swemco Limited. Impingement baffle plate assemblies. 3,759,497, Cl. 261-113.000.

Flack, Frederick Colin; and James, Evan Douglas, to National Research Development Corporation. Incontinence measurement sensor. 3,759,246, Cl. 128-2.00r.

Flagg, Frank D.: *See—*
Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; and Chasen, Lee Richard, 3,758,920.

Fletcher, Irving L.: *See—*
Fielding, Francis L.; and Fletcher, Irving L., 3,760,413.

Flier, Ronald Jacob: *See—*
Leopiktie, Stephanus F.; and Flier, Ronald Jacob, 3,759,715.

Florens, Raymond Leopold; and Ghys, Theofiel Hubert, to Agfa-Gevaert N.V. Fogged, direct-positive silver halide emulsion supersensitized with a merocyanine dye and a carbocyanine dye. 3,759,713, Cl. 96-126.000.

Floros, John C., to Firestone Tire & Rubber Company, The. Continuous bulk polymerization process for vinyl chloride copolymers. 3,759,879, Cl. 260-78.5cl.

FMC Corporation: *See—*
Berkowitz, Sidney, 3,760,015.
Glass, Clifford A.; Kraft, Robert E.; and Schmidt, Edward W., 3,759,399.
Goodley, George F., 3,759,169.
Gresham, John T., 3,759,874.
Kempf, Dennis D., 3,759,628.
Rose, Boyd W.; and Thornton, George W., 3,759,368.
Sullivan, James K.; and Howard, Richard I., 3,760,048.

Foard, James E., to Kennecott Copper Corporation. Cyclonic smelting apparatus. 3,759,501, Cl. 266-10.000.

Folkins, Hillis O., to Union Oil Company of California. Coking feedstock comprising a pyrolysis tar and a heavy cracked oil. 3,759,822, Cl. 208-131.000.

Foote, Chauncey P.: *See—*
Gazzola, Ivaldo; D'Amato, Salvatore F.; and Foote, Chauncey P., 3,759,177.

Forbes, F. Douglas: *See—*
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Ford, Ernest C., Jr., to ICI America, Inc. Unsaturated esters, polyesters, and cross-linked polyesters. 3,760,032, Cl. 260-869.000.

Ford, George L.: *See—*
Oliver, Robert K.; and Ford, George L., 3,759,795.

Ford, Leroy H., Jr.: *See—*
Dibonaventura, Alfred R.; and Ford, Leroy H., Jr., 3,759,115.

Ford, Robert Brough; and Lloyd, Martin Herbert, to International Standard Electric Corporation. 200/043.000. 3,760,131, Cl. .

Forker, Ray B., Jr.; and Lawless, William N., to Corning Glass Works. Resistive device. 3,760,325, Cl. 338-262.000.

Formaini, Robert L.; and Kim, Young D., to Allied Chemical Corporation. Oil modified alkyd compositions. 3,759,853, Cl. 260-21.000.

Forschirm, Alex S., to Celanese Corporation. Increasing the cationic dyeability of acrylic shaped articles. 3,759,665, Cl. 8-172.000.

Forte, Robert A.: *See—*
Ruthman, Jerome E.; Smith, William L.; and Forte, Robert A., 3,759,449.

Foster, Paul E.; and Little, Rollie H., to General Electric Company. Solder shield for contacts on printed circuit boards. 3,759,436, Cl. 228-57.000.

Fournel, Francis: *See—*
Thomas, Jean Claude; Fournel, Francis; and Soussan, Lyon, 3,759,885.

Fowler, William Lee, to Globe-Union Inc. Electronic circuit package and method for making same. 3,760,090, Cl. 174-52.00s.

Fox, Stewart A.; and Magill, Robert J., to Searle, G. D., & Co. Ballistic injection for gas chromatography. 3,759,107, Cl. 73-422.0gc.

Foxboro Company, The: *See—*
Nadi, Salem A., 3,760,374.

Fram, Morris; Hetherington, Robert D.; and Freeman, Craig, to Ransburg Electro-Coating Corporation. Fluid mixing and spraying apparatus. 3,759,450, Cl. 239-427.000.

Franchinot, Paul G.; and Kresan, Lawrence J., to Pitney-Bowes, Inc. Inking roller assembly. 3,759,178, Cl. 101-349.000.

Francis, James O., to Texaco Inc. Removing dialkyl sulfates from a hydrocarbon effluent with sulfuric acid from an alkylation settler. 3,760,028, Cl. 260-683.460.

Franck, Heinz-Gerhard: *See—*
Omran, Jaafar; Franck, Heinz-Gerhard; and Zander, Maxmillian, 3,759,848.

Frankenberg, Henry E., to Continental Can Company, Inc. Container shaping apparatus. 3,759,203, Cl. 113-1.00g.

Franklin, Benjamin S.: *See—*
Nibby, Chester M., Jr.; Manton, John C.; Curley, John L.; and Franklin, Benjamin S., 3,760,379.

Franz, William F.; and Hess, Howard V., to Texaco Inc. Production of methane-rich fuel gas. 3,759,679, Cl. 48-213.000.

Fraser, Ian Rowland: *See—*
Buckton, Keith Stewart; and Fraser, Ian Rowland, 3,759,234.

Fratta, Peter J. Tool holder assembly. 3,759,472, Cl. 248-201.000.

Freeman, Craig: *See—*
Fram, Morris; Hetherington, Robert D.; and Freeman, Craig, 3,759,450.

Freeman, Dixon L., to Monitor Cabinents; a division of Comerico, Inc. Reversible cabinet shelf bracket. 3,759,191, Cl. 108-42.000.

Freeman, Frank George, to Lucas, Joseph, (Industries) Limited. Rotary hydraulic machines. 3,758,899, Cl. 91-475.000.

Freeman, Willard Anton; and Hartley, Donald Jean, to Wallace-Murray Corporation. Flexible bladed fan with improved reinforcing. 3,759,630, Cl. 416-132.000.

Freggens, Robert Alfred: *See—*
United States of America, National Aeronautics and Space Administration, 3,759,443.

Frey, Laverne Lawrence: *See—*
Budych, Irvin; Frey, Laverne Lawrence; and Reefman, William Edward, 3,759,133.

Freyschlag, Herwig; Stolp, Fritz; Reif, Werner; and Pommer, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of derivatives of omega-hydroxytiglaldehyde. 3,760,004, Cl. 260-615.00a.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Vortkamp, Klaus, 3,759,125.

Friedmann, Evan B.: *See—*
McFaul, Howard J.; Erdman, Donald C.; and Friedmann, Evan B., 3,759,090.

Friend, Lindsay C., to Du Pont de Nemours, E. I., and Company. Circuit board socket. 3,760,340, Cl. 339-262.00r.

Frisch, Eldon E.: *See—*
Holmes, George W.; and Frisch, Eldon E., 3,759,775.

Frisch, Peter: *See—*
Ertel, Hartmut; and Frisch, Peter, 3,760,059.

Frisiani, Attilio, to Etablissements Proner. Machine for automatically fitting insulating caps on connecting clips. 3,758,936, Cl. 29-203.00d.

Frohberger, Paul Ernst: *See—*
Buchel, Karl Heinz; Grewe, Ferdinand; Frohberger, Paul Ernst; and Kaspers, Helmut, 3,760,078.

Frost, Charles C.; and Weis, Siegfried K., to Frost Engineered Products, Inc. Method of making hub or hearing housing, and pulley. 3,758,930, Cl. 29-159.00r.

Frost Engineered Products, Inc.: *See—*
Frost, Charles C.; and Weis, Siegfried K., 3,758,930.

Fuhring, Heinrich; and Sieber, Johannes Helmut, to Bowe, Bohler & Weber KG. System for dyeing textiles and the like. 3,759,071, Cl. 68-18.00c.

Fuji Iron & Steel Co., Ltd.: *See—*
Omori, Kazuo; Hara, Yoshiaki; and Iguchi, Masaaki, 3,759,698.

Fuji Photo Film Co., Ltd.: *See—*
Kitamoto, Tatsuji; Aonuma, Masashi; and Kawaziri, Kazuhiro, 3,759,796.
Nagae, Tadashi; Tsuji, Nobuo; and Miyazako, Takushi, 3,759,710.

Fujii, Chiyuki; Hirata, Michimasa; and Ogasawara, Masao, to Denki Kagaku Kogyo K.K. Process for preparing succinic acid or derivative thereof. 3,759,984, Cl. 260-485.00r.

Fujii, Mitsuru; and Narusawa, Izumi, to Dainippon Ink and Chemicals, Incorporated. Plastic pallet. 3,759,194, Cl. 108-58.000.

Fujimura, Hiroshi: *See—*
Tokuzumi, Tadaichi; Fujimura, Hiroshi; and Kashiwa, Norio, 3,759,884.

Fujitsu Limited: *See—*
Ishii, Atsushi; Murakami, Masayuki; Hagiwara, Yoichi; Ono, Tomio; Adachi, Kiyoshi; and Hashimoto, Shuji, 3,760,405.
Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, 3,760,364.

Fukazawa, Nobuo: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,760,044.

Fukui, Yukimasa; Kotani, Tsunehiro; and Ozeki, Toshitsugu. Lubricating oil composition. 3,759,862, Cl. 252-32.70e.

Fukuma, Norboro; Chayamichi, Hiroshi; Okamoto, Toshio; and Henmi, Hiroshi, to Asahi Chemical Industry Company Limited. Manufacture of conjugated sheath-core type composite fibers. 3,760,052, Cl. 264-171.000.

Fukumoto, Tetsuo: *See—*
Yamaguchi, Goru; Komatsu, Susumu; and Fukumoto, Tetsuo, 3,759,844.

Funsher, Jeffrey A.: *See—*
Asadorian, Arthur A.; Langer, Horst G.; and Funsher, Jeffrey A., 3,760,003.

Funt, Brunson Bert: *See—*
Espana, Salvador; and Funt, Brunson Bert, 3,760,141.

Furuhashi, Michio; Kitani, Teruo; and Sasaki, Reiichi, to Matsushita Electric Industrial Co., Ltd. Color sub-carrier reference system for a color television receiver. 3,760,095, Cl. 178-5.4sy.

Fuzesi, Stephen: *See—*
Doerr, Richard L.; and Fuzesi, Stephen, 3,759,664.

Fyans' Associates, Inc.: *See—*
Fyans, Frank, 3,759,460.

Fyans, Frank, to Fyans' Associates, Inc. Collapsible yarn die tube. 3,759,460, Cl. 242-118.110.

Gacek, Joseph A.; and Parker, Joseph E., to Tetrachord Corporation. Speech diagnostic and therapeutic apparatus including means for measuring the speech intensity and fundamental frequency. 3,760,108, Cl. 179-1.0sa.

Gadd, Ronald O. C.; and Smith, Frank K. Shoe lasting machine. 3,758,902, Cl. 12-8.300.

Gaeth, Rudolf; Schmitt, Bernhard; and Blum, Dieter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the manufacture of polymer foams containing esters of tertiary alcohols as side groups. 3,760,047, Cl. 264-54.000.

GAF Corporation: *See—*
Rudoff, Stanley; and De Thomas, Waldo R., 3,759,845.

Gajewski, Henry Martin; and Growski, Clarence John, to Baxter Laboratories, Inc. Reducing blood clotting with antithrombogenic materials containing quaternary phosphonium salts. 3,759,788, Cl. 195-1.800.

Galbraith, Francis A. Batch operated milking apparatus. 3,759,225, Cl. 119-14.040.

Galetto, Louis V.: *See—*
Arnold, Robert W.; and Galetto, Louis V., 3,760,282.

Gallegra, Pasquale: *See—*
Pugin, Andre; Hopee, Heinrich; and Gallegra, Pasquale, 3,759,947.

Galvani, Giovanni. Method for repairing cracks in ingot molds, plates and similar cast iron elements for use in iron or steel casting. 3,758,939, Cl. 29-402.000.

Galvin, Aaron A.; and Shapiro, L. Dennis, to Aerospace Research, Inc. Intrusion detection system employing quadrature sampling. 3,760,400, Cl. 340-258.00a.

Gammill, Benny B.; Ladewig, Glen R.; and Ham, George E., to Dow Chemical Company, The. Ion exchange catalysts for the preparation of bisphenols. 3,760,006, Cl. 260-619.00a.

Ganellin, Charon Robin: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,759,944.

Garbuzovsky, Boleslav Iosifovich: *See—*
Axelrod, Lev Samuilovich; Akatov, Alexandr Vasilievich; Rudenko, Valery Mikhailovich; Fedorov, Viktor Viktorovich; Barashkov, Ruslan Yakovlevich; and Garbuzovsky, Boleslav Iosifovich, 3,759,494.

Garfield, Lawrence A.: *See—*
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugen, 3,759,575.

Garinger, Jesse D. Adjustable scriber attachment for height gauge. 3,758,955, Cl. 33-169.00r.

Garwood, William E.: *See—*
Brennan, James A.; Garwood, William E.; and Myers, Harold C., 3,759,821.

Gass, Edward W.: *See—*
Copland, George V.; and Gass, Edward W., 3,760,362.

Gatzi, Karl: *See—*
Hodel, Ernst; and Gatzi, Karl, 3,759,719.

Gaven, Thomas J., to McGraw-Edison Company. Dictator-transcriber indexing system. 3,760,124, Cl. 179-100.20z.

Gavin, David F.; and Raymond, Maurice A., to Olin Corporation. Method for preparing mercaptopyridines using alkali metal polysulfides. 3,759,932, Cl. 260-294.086.

Gayot, Jean, to Engins Matra, mesne. Rail vehicle steering system. 3,759,187, Cl. 104-130.000.

Gazzola, Ivaldo; D'Amato, Salvatore F.; and Foote, Chauncey P., to American Bank Note Company. Printing press with sheet inspection station. 3,759,177, Cl. 101-232.000.

Gebauer, Adam George, to Parkson Corporation. Plate evaporator for removing volatiles from liquids. 3,759,308, Cl. 159-13.00r.

Gebr. Hennig GmbH: *See—*
Schnidberger, Hans-Peter, 3,759,035.

Geffroy, Robert, to Sealfire. Piston and piston rings unit for an internal combustion engine. 3,759,148, Cl. 92-160.000.

Geiger, Lewis J., Jr.; and Estes, James W., to Airco, Inc. Process for melting scrap with a plurality of oppositely directed heating means. 3,759,699, Cl. 75-43.000.

Geissler, Georg: *See—*
Kuhne, Rudolf; Hamal, Heinrich; Geissler, Georg; Herbst, Willy; and Ribka, Joachim, 3,759,731.

Geister, Howard Bob. Foot toy. 3,758,891, Cl. 3-5.000.

General Cable Corporation: *See—*
Kane, Edward Michael, 3,759,755.

General Dynamics Corporation: *See—*
Varlas, Mike, 3,759,739.

General Electric Company: *See—*
Berger, Abe; and Selin, Terry G., 3,759,968.
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Borom, Marcus P.; and Johnson, Lyman A., 3,759,101.
Borom, Marcus P.; and Johnson, Lyman A., 3,759,108.
Czewski, Robert L.; and Gross, Robert S., 3,760,316.
Davidson, William E., 3,758,969.
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Dumas, William V., 3,759,779.
Foster, Paul E.; and Little, Rollie H., 3,759,436.
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Johnson, Lyman A.; and Borom, Marcus P., 3,759,109.
Krasienko, Chester A.; and Harmeyer, Stanley G., 3,760,314.
Merrill, Duane F.; and Cooke, Richard C., Jr., 3,759,867.
Neissel, John P., 3,760,183.
Olson, Hjalmar A., 3,759,540.
Peroutky, Donald C., 3,760,243.
Reimer, Robert M., 3,759,091.
Sholtes, George T., 3,759,471.
Walter, John L.; and Gigliotti, Michael F. X., 3,759,602.
Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,760,383.
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General Foods Corporation: *See—*
Schulman, Marvin; Pitchon, Esra; and Anderson, Charles D., 3,759,716.

General Motors Corporation: *See—*
Bleil, Carl E., 3,759,671.
Jacobs, James W., 3,759,058.

General Signal Corporation: *See—*
Auer, John H., Jr., 3,760,343.
Mello, Robert Edward; and Ciavatta, Armand, 3,760,317.

Georgia-Pacific Corporation: *See—*
Felicetta, Vincent F.; and King, Ellis Gray, 3,759,826.

Georgopulos, Thomas, to GTE Automatic Electric Laboratories, Incorporated. Telephone type electrical connectors. 3,760,328, Cl. 339-18.00r.

Geoth, Joseph F.: *See—*
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Gerber, Heinz Joseph, to Gerber Scientific Instrument Company, The. Method and apparatus for transporting a strip of recording material. 3,759,433, Cl. 226-54.000.

Gerber Scientific Instrument Company, The: *See—*
Gerber, Heinz Joseph, 3,759,433.

Gerin, Merlin: *See—*
Charamel, Pierre, 3,760,128.

Gevaert-Agfa N.V.: *See—*
De Cat, Arthur Henri; and Manssens, Leo Hypoliet, 3,759,935.

Gevirtz, Arthur H.: *See—*
Hageman, Howard A.; Gevirtz, Arthur H.; and von Schmeling, Bogislav, 3,759,689.

Ghirga, Marcello: *See—*
Calcagno, Benedetto; Piccolo, Luigi; and Ghirga, Marcello, 3,760,066.

Ghys, Theofiel Hubert: *See—*
Florens, Raymond Leopold; and Ghys, Theofiel Hubert, 3,759,713.

Gianatasio, Henry L.: *See—*
Edes, Ferenc; and Gianatasio, Henry L., 3,759,457.

Gibbons Brothers Limited: *See—*
Barsby, Noel, 3,759,661.

Gibbons, Edward J.; and Daigle, Norman O., said Daigle assor. to said Gissons, Edward J. Hollow stamp handle. 3,759,180, Cl. 101-405.000.

Gibson, Steve B.; Lyttle, William B.; and Repasy, Andy J., to United States of America, Army. Uncooled gallium-aluminum-arsenide laser illuminator. 3,760,175, Cl. 240-1.0el.

Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; Singer, Paul A.; and Zimmer, Ernest B., to Cincinnati Time Recorder Company, Inc. Automatic fee determining system for parking garage. 3,760,160, Cl. 235-61.70r.

Giesemann, Rolf: *See—*
Weber, Karl Heinz; Zeile, Karl; Dannesberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,760,074.

Gigliotti, Michael F. X.: *See—*
Walter, John L.; and Gigliotti, Michael F. X., 3,759,602.

Gillett, Orval B. Set of hollow core shots. 3,759,513, Cl. 272-59.00b.

Gimenez, German Artigas, to Saint-Gobain. Apparatus for modifying molten glass by an additive. 3,759,684, Cl. 65-145.000.

Ginn, David W., to Data-Control Systems, Inc. Error rate detection system. 3,760,354, Cl. 340-146.10e.

Gissons, Edward J.: *See—*
Gibbons, Edward J.; and Daigle, Norman O. (said Daigle assor. to said), 3,759,180.

Glade, Calvin P. Portable shelter. 3,759,277, Cl. 135-4.00r.

Glas, Dirk. Circular saw grinding attachment. 3,759,118, Cl. 76-43.000.

Glascock, Homer H.: *See—*
Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,760,383.

Glasgow, David Gerald: *See—*
McClung, Charles E.; and Glasgow, David Gerald, 3,759,778.

Glass, Clifford A.; Kraft, Robert E.; and Schmidt, Edward W., to FMC Corporation. Adjustable, self-locking load supporting mechanism for booms. 3,759,399, Cl. 212-55.000.

Glass, Marvin, & Associates: *See—*
Breslow, Jeffrey D.; Glass, Marvin I.; and Burck, Joseph M., 3,759,521.

Glass, Marvin I.: *See—*
Breslow, Jeffrey D.; Glass, Marvin I.; and Burck, Joseph M., 3,759,521.

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Global Marine Inc.: *See—*
Anders, Edward O., 3,759,046.

Kuntz, Francis A., Jr., 3,759,211.
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Fowler, William Lee, 3,760,090.
Godley, Lisbeth N.: *See—*
Kamborian, Jacob S.; and Caris, Costa, 3,758,904.
Gogarty, William B., to Marathon Oil Company. Foam for secondary and tertiary recovery. 3,759,325, Cl. 166-273.000.
Goldberg, Morris I. Bounce-restricting brace for child's bouncer-walker. 3,759,539, Cl. 280-87.003.
Goldman, Leon: *See—*
Marsico, Joseph William, Jr.; Joseph, Joseph Peter; and Goldman, Leon, 3,760,082.
Marsico, Joseph William, Jr.; and Goldman, Leon, 3,760,083.
Marsico, Joseph William, Jr.; Joseph, Joseph Peter; and Goldman, Leon, 3,760,084.
Goldsborough, Cornelius S., Jr.: *See—*
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Golson, Malcolm: *See—*
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Good, Harper W., to Carborundum Company, The. Apparatus for granulating molded sand. 3,759,451, Cl. 241-77.000.
Goodley, George F., to FMC Corporation. Strapping machine. 3,759,169, Cl. 100-29.000.
Goodrich, B. F., Company, The: *See—*
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Goodwin, Walter H., to McDonnell Douglas Corporation. Latching system. 3,759,476, Cl. 248-361.00r.
Goodyear Tire & Rubber Company, The: *See—*
Woods, Harry E., 3,759,188.
Goransson, Kjell; and Dahlgren, Jan-Ake, to Sonab Development AB. Switchable band-pass filter having resonant circuit energized inductively from constant current source. 3,760,301, Cl. 333-70.00r.
Gorecki, Joseph S.: *See—*
Martin, Jack; and Gorecki, Joseph S., 3,760,217.
Gorwicz, David; Battye, Edwin Amitage; and Wright, James, to Conveyancer Limited, mesne and Sevcon Engineering Limited. Relative speed control system for D.C. motor vehicle drive. 3,760,246, Cl. 318-52.000.
Gottfried, Arthur H.: *See—*
DeSantis, Charles M.; and Gottfried, Arthur H., 3,760,219.
Gould, Inc.: *See—*
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Graber, Walter P., to Kysor Industrial Corporation. Split shutter control system. 3,759,054, Cl. 62-183.000.
Graber, Walter P., to Kysor Industrial Corporation. Shutter control system. 3,759,056, Cl. 62-183.000.
Grace, W. R., & Co.: *See—*
Guthrie, James L., 3,759,875.
Harrison, William B., 3,759,204.
Roteet, Charles S., III, 3,759,642.
Grad, John E., to Westinghouse Electric Corporation. Connecting adapter for electric cable and fuse. 3,760,341, Cl. 339-265.00f.
Graeme, Jerald G., to Burr-Brown Research Corporation. FET zero temperature-coefficient bias. 3,760,199, Cl. 307-296.000.
Grafe, Hans; and Ullrich, Hans, to Siemens Aktiengesellschaft. Method of producing electrically insulated aluminum contacts. 3,759,798, Cl. 204-15.000.
Graham, Robert P.: *See—*
Huxsoll, Charles C.; Graham, Robert P.; and Weaver, Merle L., 3,759,160.
Grandfield, Joseph P.: *See—*
Dawson, Harry J.; Hoftiezer, Wallace A.; Keedy, David E.; Mangus, Ervin E.; Patton, Eugene K.; and Grandfield, Joseph P., 3,759,323.
Grandy, Andrew J., to United States of America, Army. Cartridge ladder link. 3,759,137, Cl. 89-35.00r.
Granger, Joe, Jr. Walking-type concrete edger. 3,758,909, Cl. 15-235.800.
Grant, Norman H.; and Alburn, Harvey L., to American Home Products Corporation. 2-Phenoxyalkanoic acid esters. 3,759,950, Cl. 260-326.00a.
Graphic Trend Associates Ltd.: *See—*
Hird, John, 3,759,477.
Graves, Kenneth E.: *See—*
McCune, Clarence G.; Vincer, John C.; and Graves, Kenneth E., 3,759,442.
Greco, Phillip V., Sr. Heating torch. 3,759,245, Cl. 126-406.000.
Green, Aaron F., to Knobelsdorff Instruments Incorporated. System for linarizing signals. 3,760,185, Cl. 250-226.000.
Green Hazel: *See—*
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Greenberg, Daniel H.: *See—*
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Greene, Udell T., to Diamond Shamrock Corporation. Method of bleaching pulp with an aqueous chlorine solution while suppressing vaporization of liquid chlorine. 3,759,784, Cl. 162-87.000.
Gregg, Stanley J., to Allied Chemical Corporation. Gelled alcohols. 3,759,674, Cl. 44-7.00c.
Gregor, John S.; and Radlinsky, Raymond, to International Business Machines Corporation. Unprintable character recognition. 3,760,366, Cl. 340-172.500.
Greiner, Henri; Masson, Yves; and Olagnier, Jean, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Tire having reinforcing with high modulus of elasticity. 3,759,306, Cl. 152-374.000.
Gresham, John T., to FMC Corporation. Fluorinated polyurethanes as soil release agents. 3,759,874, Cl. 260-77.5ap.
Grewe, Ferdinand: *See—*
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Grewe, Ferdinand; Schrader, Gerhard; Kaspers, Helmut; and Meiser, Werner, to Bayer Aktiengesellschaft. Method of combating fungi using N-substituted phthalimides. 3,760,085, Cl. 424-274.000.
Grimmell, William Charles: *See—*
Adams, Jim Mills; and Grimmell, William Charles, 3,760,166.
Griner, Arthur J.; and Blain, William A., to Nabisco, Inc. Apparatus for processing a strip of pliable material. 3,759,650, Cl. 425-302.000.
Grodinsky, Robert M. AC to DC converter circuit. 3,760,255, Cl. 321-8.00r.
Groenhof, Eugene D.; and Swihart, Terence J., to Dow Corning Corporation. Lubricant compositions. 3,759,827, Cl. 252-29.000.
Grogg, William E.: *See—*
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Gross, Donald S., to Rohr Corporation. Pressure foot guide device. 3,758,933, Cl. 29-200.00p.
Gross, Robert S.: *See—*
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Grossi, Giuseppe Telecommunicazioni: *See—*
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GTE Automatic Electric Laboratories, Incorporated: *See—*
Beeman, Robert H.; and Tarr, Lloyd A., 3,760,269.
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O'Toole, Gerald; and Puccini, Sergio E., 3,760,116.
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Guido, Peter. Credit card and signature verification system. 3,759,179, Cl. 101-368.000.
Gulf Research & Development Company: *See—*
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Gum, Wilson F., Jr.; and Nelson, David A., to Dow Chemical Company, The. 1-(Dichloronitromethyl)benzene. 3,760,013, Cl. 260-646.000.
Gunson, Sam; Heyes, Alan; and Sale, Anthony John Hanson, to Lever Brothers Company. Process for making a dehydrated meat product. 3,759,723, Cl. 99-208.000.
Gunter, Kenneth H. Bed frame connector. 3,758,895, Cl. 5-304.000.
Guntersdorfer, Max, to Siemens Aktiengesellschaft and said Guntersdorfer assor. to Braun Aktiengesellschaft. Depolarization protection for ceramic piezoelectric motors. 3,760,203, Cl. 310-8.100.
Gurley, Grey Manning, to AMP Incorporated. Electrical connecting device for insulated wires. 3,760,331, Cl. 339-36.000.
Gustafson, Kenneth A.: *See—*
Zinkin, De Wayne; Coker, Cliff J.; and Gustafson, Kenneth A., 3,759,511.
Guthrie, James L., to Grace, W. R., & Co. Curable liquid pigment composition and method. 3,759,875, Cl. 260-76.000.
Gutman, Arnold D., to Stauffer Chemical Company. Phosphorus containing compounds. 3,760,040, Cl. 260-941.000.
Gutman, Arnold D., to Stauffer Chemical Company. Certain oximinophosphonodithioates and their use as insecticides and acaricides. 3,760,072, Cl. 424-210.000.
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Gyongyos, Ivan, to Prolizenz AG. Method of starting a casting machine having caterpillar-type molds for casting nonferrous metal strips. 3,759,313, Cl. 164-87.000.

Haamann, Joseph, Freudenberger Winden- und Hebezeugfabrik: *See*—
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Habermeier, Juergen: *See*—
Baizer, Hans; Habermeier, Juergen; and Porret, Daniel, 3,759,954.
Hack, Helmuth: *See*—
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,760,044.
Hadad, Joseph D.; Plunk, Troy E.; and Banks, Donald S., to Raytheon Company. Radiation seeker. 3,760,420, Cl. 343-117.00r.
Haeff, Andrew V.; and Harris, Franklin H., to United States of America, Navy. Synchronized pulse jammer and decoy. 3,760,417, Cl. 343-18.00e.
Hagebaum, Hans-Jurgen: *See*—
Salamon, Manfred; Hagebaum, Hans-Jurgen; Wandel, Martin; Muhlhausen, Cornelius; Bau, Werner; and Reinecke, Gerd-Konrad, 3,759,742.
Hageman, Howard, to Uniroyal, Inc. Fumaramic acid derivatives. 3,759,909, Cl. 260-247.20a.
Hageman, Howard A.; Gevirtz, Arthur H.; and von Schmeling, Bogislav, to Uniroyal, Inc. Method for regulating plant growth. 3,759,689, Cl. 71-76.000.
Hagemeyer, Hugh J., Jr.: *See*—
Robinson, Alfred G.; Blood, Alden E.; and Hagemeyer, Hugh J., Jr., 3,760,011.
Hager, Robert Bonner; and Walter, Gerald Joseph, to Pennwalt Corporation. Esters of perfluoroalkyl terminated alkylene thioalkanoic acids. 3,759,981, Cl. 260-481.00r.
Hagino, Hiroshi: *See*—
Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,759,790.
Hagiwara, Yoichi: *See*—
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Hahn, Hans Helmut: *See*—
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Hajos, Zoltan G.; and Parrish, David R., to Hoffmann-La Roche Inc. Perfume compositions containing ethyl 2,4-dioxohexanoate. 3,760,087, Cl. 424-365.000.
Halcon International, Inc.: *See*—
Barker, Robert S., 3,759,840.
Onsager, Olav T., 3,759,983.
Hale, Frank L.: *See*—
Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr., 3,759,355.
Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr. Motion retarding system for trucks. 3,759,355, Cl. 188-290.000.
Hale, Samuel J., Jr.: *See*—
Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr., 3,759,355.
Hall, Frank Kenneth, to O'Dell Manufacturing Inc. Aquarium. 3,759,224, Cl. 119-5.000.
Hall, Jack F., to U-Cart Concrete Systems Inc. Concrete mixing system. 3,759,492, Cl. 259-169.000.
Halliburton Company: *See*—
Carnes, James D., 3,759,327.
Copland, George V.; and Gass, Edward W., 3,760,362.
Halophane Company, Incorporated, mesne: *See*—
Kiefer, Edward J.; and Rogers, Dale W., 3,760,226.
Halvorsen, Harold W. Magnetic conveyer system. 3,760,245, Cl. 318-38.000.
Halvorson, Halvor O.: *See*—
Boler, Leonard J.; Hanssen, Nels S.; Beaulieu, Bryan J.; Cherne, Lloyd G.; and Halvorson, Halvor O., 3,759,495.
Ham, George E.: *See*—
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Hamal, Heinrich: *See*—
Kuhne, Rudolf; Hamal, Heinrich; Geissler, Georg; Herbst, Willy; and Ribka, Joachim, 3,759,731.
Hamer, Colin A.; and Loro, Alberto, to Microsystems International Limited. Fabrication of beam leads. 3,760,238, Cl. 317-234.00r.
Hamilton, Alexander: *See*—
Bradley, Gordon Frank; Price, David; and Hamilton, Alexander, 3,759,733.
Hamilton, Harry A.: *See*—
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,759,825.
Hamilton, Richard J.; and McGough, Gerald B., to GTE Automatic Electric Laboratories Incorporated. Coin disposal apparatus. 3,759,440, Cl. 232-57.500.
Hamilton, Richard J.; and Petkewicz, Frank J., to GTE Automatic Electric Laboratories Incorporated. Coin disposal apparatus. 3,759,441, Cl. 232-57.500.
Hammann, Ingeborg: *See*—
Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 3,760,041.
Hammond, Myers G., to Du Pont de Nemours, E. I., and Company. High-strength acid containing H_2O_2 to scrub SO_3. 3,760,061, Cl. 423-242.000.
Hamon, Emile Francois Joseph, to Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale-Delegation Ministerielle pour l'Armement. Electromagnetic stepping motor. 3,760,208, Cl. 310-49.000.
Handgards, Inc.: *See*—
Blatz, Robert A., 3,759,370.
Hanna, Michael F.: *See*—
United States of America, National Aeronautics and Space Administration, 3,760,394.
Hannaford, Colin William, to International Business Machines Corporation. Non-current summing multiple input latching circuit. 3,760,190, Cl. 307-218.000.
Hanninen, Clifford: *See*—
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugen, 3,759,575.
Hansel, William B., to Sun Oil Company of Pennsylvania, mesne. Contamination-preventing nozzle. 3,759,423, Cl. 222-153.000.
Hansen, Erling J., mesne: *See*—
Anderson, Gordon R., 3,759,161.
Hanson Limited: *See*—
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Hara, Yoshiaki: *See*—
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Hardway, Edward V., Jr., to Spearhead, Inc. Three-terminal capacitive servomechanism. 3,760,254, Cl. 318-662.000.
Harmeyer, Stanley G.: *See*—
Krasienko, Chester A.; and Harmeyer, Stanley G., 3,760,314.
Harris, Cliff Andrew, to Bell Telephone Laboratories, Incorporated. Digitally controllable variable active RC filter. 3,760,287, Cl. 330-9.000.
Harris, Franklin H.: *See*—
Haeff, Andrew V.; and Harris, Franklin H., 3,760,417.
Harris-Intertype Corporation: *See*—
Hitch, Thomas R.; and Wilson, William J., 3,759,402.
Harrison, Henry R., to Texaco Inc. Soluble oil compositions. 3,759,828, Cl. 252-33.400.
Harrison, William B., to Grace, W. R., & Co. Cutoff mechanism for container closure lining machines. 3,759,204, Cl. 113-114.0be.
Harsanyi, Eugen. Cordless electric iron and current-supplying means therefor. 3,760,149, Cl. 219-247.000.
Hartel, Arnold: *See*—
Helger, Roland; Hartel, Arnold; Stein, Alfred; and Baumer, Wilhelm, 3,759,374.
Harter Corporation: *See*—
Koepke, Earl H., 3,759,572.
Hartford Special Machinery Company, The: *See*—
Morton, Robert D., 3,758,900.
Hartkopf, Heinz, to Kieserling, Th., & Albrecht. Method and apparatus for feeding elongated rotary workpieces in straightening machines or the like. 3,759,077, Cl. 72-99.000.
Hartley, Donald Jean: *See*—
Freeman, Willard Anton; and Hartley, Donald Jean, 3,759,630.
Hartmann, Hans, to Aktiengesellschaft Brown, Boveri & Cie. Electrical coil with spacing bands. 3,760,315, Cl. 336-205.000.
Harvey, Donald M., to Eastman Kodak Company. Dual photocell range finder apparatus. 3,759,614, Cl. 356-4.000.
Harvey, William K., to Fair-Conn., Inc. Trolley wheel. 3,759,190, Cl. 105-150.000.
Harwick, Nathan Everette, III, to Bell Telephone Laboratories, Incorporated. Method of and apparatus for testing the quality of bonded connections of semiconductor devices. 3,759,088, Cl. 73-37.000.
Haselton, Frederick R. Boat and swimming pool intrusion detector. 3,760,396, Cl. 340-240.000.
Hashimoto, Shuji: *See*—
Ishii, Atsushi; Murakami, Masayuki; Hagiwara, Yoichi; Ono, Tomio; Adachi, Kiyoshi; and Hashimoto, Shuji, 3,760,405.
Haskett, Frank Barry, to Martin, Joan Hixon. Chlorination of hydrocarbons. 3,760,014, Cl. 260-650.00r.
Hasselgren, Borjf; and Sebardt, Wilhelm, to Intong Aktiebolag. Method of and apparatus for separating lightweight (aerated) concrete elements. 3,758,934, Cl. 29-200.00d.
Hasuo, Masayoshi: *See*—
Yamaguchi, Kazuo; Hasuo, Masayoshi; and Ito, Isao, 3,759,918.
Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, to Sumitomo Chemical Co., Ltd. High strength aluminum casting alloy. 3,759,758, Cl. 148-159.000.
Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., to Squibb, E. R., & Sons, Inc. Thiazolinyl and thiazinyl derivatives of indazoles. 3,759,903, Cl. 260-243.00r.
Hauptmann, Karl Heinz: *See*—
Weber, Karl Heinz; Zeile, Karl; Dannesberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,760,074.
Hauptmann, Maria: *See*—
Weber, Karl Heinz; Zeile, Karl; Dannesberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,760,074.
Hausmann, Heinrich. Turning key for rolling-up the empty end of a tube, possible in combination with a squeezing device. 3,759,421, Cl. 222-99.000.
Hayasaka, Akio: *See*—
Taniguchi, Kenji; Hayasaka, Akio; Masaki, Akira; Chiba, Tsuneyo; and Kaji, Tadao, 3,760,200.
Hayashi, Shigemi: *See*—
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Hayashi, Yoshihiro: *See*—
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Healy, Benedict P.: *See—*
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Heim Universal Corporation: *See—*
Rozentals, Alfreds, 3,759,589.

Heisler, Alan W., 1/3 to Stidham, Melvin R. Discus toy. 3,758,985, Cl. 46-74.00d.

Helger, Roland; Hartel, Arnold; Stein, Alfred; and Baumer, Wilhelm, to Merck Patent Gesellschaft mit beschrankter Haftung. Cuvette. 3,759,374, Cl. 206-65.00r.

Hellstrom, Nils E.: *See—*
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Hemming, Raymond Charles: *See—*
Thompson, Joseph; Hemming, Raymond Charles; Critchley, John Edward; and Morrell, Ronald Joseph, 3,760,104.

Henderson, David L.: *See—*
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Henderson, Ross, to Gould, Inc. High speed AC failure detector circuit. 3,760,230, Cl. 317-27.00r.

Henmi, Hiroshi: *See—*
Fukuma, Norboro; Chayamichi, Hiroshi; Okamoto, Toshio; and Henmi, Hiroshi, 3,760,052.

Henrichs, Benjamin D.; and Djuren, Gordon A., to Compact Industries, Inc. Cup handling apparatus. 3,759,303, Cl. 141-1.000.

Henry, James; and Macmaster, Malcolm, to Emhart Corporation. Duct and blower arrangement. 3,759,158, Cl. 98-33.000.

Hepworth Plastics Limited, mesne: *See—*
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Carter, Raymond Charles, 3,759,554.

Herbst, Willy: *See—*
Kuhne, Rudolf; Hamal, Heinrich; Geissler, Georg; Herbst, Willy; and Ribka, Joachim, 3,759,731.

Hercules Incorporated: *See—*
Breslow, David S., 3,759,878.

Hernqvist, Karl Gerhard, to RCA Corporation. Internally-modulated gas laser. 3,760,296, Cl. 331-94.500.

Herrle, Karl: *See—*
Hoffmann, Ernst; and Herrle, Karl, 3,759,880.

Hertrich, Friedrich R., to Iomec, Inc. Lightweight linear motor. 3,760,206, Cl. 310-13.000.

Herwig, William C.; and Westermann, Donald H., to Miller Brewing Company. Method of purifying acidic components of a hop extract. 3,759,999, Cl. 260-586.00r.

Herzberger, Peter; and Di Piazza, Learco, to European Atomic Energy Community (Euratom). Optimum focusing in an electron beam welding machine. 3,760,144, Cl. 219-121.0eb.

Heseltine, Donald W.: *See—*
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Hesketh, John Frederick: *See—*
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Hess, Howard V.: *See—*
Franz, William F.; and Hess, Howard V., 3,759,679.

Hess, Karl-Gunter, to Schneider, Jos., & Co. Optische Werke. Two-way drive for optical systems and the like. 3,760,253, Cl. 318-618.000.

Hesse, Kurt. Stand. 3,759,623, Cl. 403-298.000.

Hester, Jackson B., Jr., to Upjohn Company, The. Amido and amino triazolo benzodiazepines. 3,759,943, Cl. 260-38.00r.

Heter, Elmo W., Jr., to Sheridan Products Inc. Dispenser type box. 3,759,428, Cl. 222-480.000.

Hetherington, Robert D.: *See—*
Fram, Morris; Hetherington, Robert D.; and Freeman, Craig, 3,759,450.

Heuberger, Clarence A. Electric fence extender. 3,759,490, Cl. 256-10.000.

Heuer-Leonidas S.A.: *See—*
Jeanmonod, Jacques, 3,759,033.

Heyes, Alan: *See—*
Gunson, Sam; Heyes, Alan; and Sale, Anthony John Hanson, 3,759,723.

Hickner, Richard A., to Dow Chemical Company, The. Polyether-polythiols, method of preparation and mixtures of polythioether-polythiols with epoxide resins. 3,759,871, Cl. 260-47.0ec.

Hidalgo, John: *See—*
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Hiestand, David F.: *See—*
Provenzano, Joseph Charles; Hiestand, David F.; and Krabec, James A., 3,759,082.

Higashikawa, Shizuo: *See—*
Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.

Higdon, Buster Watson: *See—*
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Higo, Kyoichi: *See—*
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Higuchi, Hisayuki: *See—*
Mori, Takaaki; Higuchi, Hisayuki; and Uehara, Keijiro, 3,759,761.

Hildebrand, Bernard P., to Battelle Development Corporation. Scanned holography with a rotating extended source. 3,760,344, Cl. 340-5.00h.

Hildebrand, Klaus, to Wild Heerbrugg Aktiengesellschaft. Electro-optical distance measuring instrument. 3,759,616, Cl. 356-5.000.

Hildebrand, Otto G. Quickly adjustable vise jaw with tool couple elements. 3,759,504, Cl. 269-87.000.

Hildebrant, Floyd J.: *See—*
Chovanec, John J.; and Hildebrant, Floyd J., 3,760,262.

Hildenbrand, Jerry L.; and Wagenaar, Loren B., to Westinghouse Electric Corporation. Electrical bushing assembly having resilient means enclosed within sealing means. 3,760,089, Cl. 174-12.0bh.

Hilgers, Howard M., to Production Technology Inc. Chuck with individual jaw compensation. 3,759,535, Cl. 279-1.00j.

Hill, Herbert N., Jr., to Union Carbide Corporation. Analytical process. 3,759,666, Cl. 23-230.00b.

Hill, Marion E.: *See—*
Coon, Clifford L.; Hill, Marion E.; and Ross, Donald L., 3,759,998.

Hillman, James George Edward: *See—*
Rowlands, Tom; and Hillman, James George Edward, 3,759,408.

Hilmanowski, James R.: *See—*
Nupp, Donald L.; and Hilmanowski, James R., 3,758,914.

Himics, Richard J., to Sun Chemical Corporation. Crosslinking nonomers containing the 1-aza-3,7-dioxabicyclo[3.3.0]octane structures. 3,759,942, Cl. 260-307.00f.

Hinckley, John N.; and Stonehocker, Van Tassel, to Beloit College. Rotary engine valve means. 3,759,640, Cl. 418-249.000.

Hinley, John James: *See—*
Twist, Walter; Holdsbrough, Keith; and Hinley, John James, 3,759,732.

Hinz, Paul: *See—*
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Hirakawa, Tamotsu: *See—*
Watanabe, Kiyoshi; Tanaka, Tutomo; Hirakawa, Tamotsu; and Sasaki, Mamoru, 3,759,789.

Hirane, Seiichi: *See—*
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Hirano, Takehisa, to Kabushiki Kaisha Keihinseiki Seishakusho. Fluid control device. 3,759,484, Cl. 251-67.000.

Hirasawa, Yoshiro: *See—*
Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, 3,760,235.

Hirata, Michimasa: *See—*
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Hird, John, to Graphic Trend Associates Ltd. Display stands. 3,759,477, Cl. 248-459.000.

Hirohashi, Toshiyuki: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.

Hirose, Koji: *See—*
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Hirsch, Arnold: *See—*
Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, 3,759,899.

Hitachi, Ltd.: *See—*
Inose, Fumiyuki; and Kita, Yuzo, 3,760,357.
Mori, Takaaki; Higuchi, Hisayuki; and Uehara, Keijiro, 3,759,761.
Nomoto, Yoshihisa; Oguino, Masanori; Ueda, Seiichi; and Kitamura, Sadao, 3,760,196.
Taniguchi, Kenji; Hayasaka, Akio; Masaki, Akira; Chiba, Tsuneyo; and Kaji, Tadao, 3,760,200.
Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, 3,760,364.
Yamazaki, Eiichi; and Kanai, Hiromi, 3,760,214.
Yamazaki, Eiichi; and Kanai, Hiromi, 3,760,220.
Yoda, Mikio; Ishida, Shinnosuke; and Ashizawa, Haluo, 3,759,560.

Hitch, Thomas R.; and Wilson, William J., to Harris-Intertype Corporation. Counter ejector. 3,759,402, Cl. 214-6.00h.

Hitrys, Paul; and Wainer, Joshua S. Protective enclosure. 3,759,195, Cl. 109-9.000.

Hlasnicek, Richard S.; and Towne, Paula. Mobius band type amusement device. 3,758,981, Cl. 46-43.000.

HMW Industries, Inc.: *See—*
McCullough, Robert E.; and Hougendobler, Cleon W., 3,759,031.
Walton, Richard S., 3,760,406.

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Hoag, Eric J.: *See—*
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Hockin, John; Lund, Carl H.; and Danesi, Wilbert P., to Martin-Marietta Corporation, mesne. Tungsten containing alloy. 3,759,707, Cl. 75-171.000.

Hodan, Joseph E., III. Board game apparatus. 3,759,522, Cl. 273-135.0aa.

Hodel, Ernst; and Gatzi, Karl, to Ciba-Geigy Corporation. Preservation of fruits with sulfate and dihydrogen phosphate salts of 5-acetyl-8-hydroxy-quinoline. 3,759,719, Cl. 99-154.000.

Hoesch Aktiengesellschaft: *See—*
Diener, Arnulf; and Kutscher, Horst, 3,759,700.

Hoff, Stephen J. High speed variable ratio pulley. 3,759,111, Cl. 74-230.17e.

Hoffman, Charles R.; and Laitin, William W., to Motorola, Inc. Silicon gate complementary MOS dynamic ram. 3,760,380, Cl. 340-173.00r.

Hoffman, Hans, to Telesco Brophey Limited. Handle for umbrella. 3,759,278, Cl. 135-46.00m.

Hoffmann, Ernst; and Herrle, Karl, to Badische Aniline & Soda-Fabrik Aktiengesellschaft. Manufacture of insoluble and only slightly swellable poly-N-vinylpyrrolidone-2. 3,759,880 Cl. 260-80.300.

Hoffmann, Roy M.: *See—*
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Hoffmann-La Roche Inc.: *See—*
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Hogg, Walter R., to Coulter Electronics, Inc. Axial trajectory sensor having gating means controlled by pulse duration measuring for electronic particle study apparatus. 3,760,281, Cl. 328-91.000.

Holaday Industries, Inc.: *See—*
Bach, Stanley Monrad, Jr.; Smith, Leonard S.; and Holaday, Reed E., 3,760,271.

Holaday, Reed E.: *See—*
Bach, Stanley Monrad, Jr.; Smith, Leonard S.; and Holaday, Reed E., 3,760,271.

Holder, Charles B., to Texaco Inc. Polycrylate casting process. 3,759,881, Cl. 260-86.10e.

Holdsbrough, Keith: *See—*
Twist, Walter; Holdsbrough, Keith; and Hinley, John James, 3,759,732.

Holley Carburetor Division: *See—*
Saxby, Richard M., 3,759,015.

Hollins, Jesse R. Apparatus for automatically extinguishing light of a vehicle. 3,760,236, Cl. 317-142.0td.

Hollister Incorporated: *See—*
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Holm, William J., to Riggs & Lombard, Inc. Apparatus for shearing patterns on fabrics. 3,758,924, Cl. 26-16.000.

Holmberg, Bo F.; Hellstrom, Nils E.; and Modin, Sigurd K. J. Apparatus for grading lumber. 3,759,384, Cl. 209-122.000.

Holmes, George W.; and Frisch, Eldon E. Method for improving the adhesion between silicone elastomers. 3,759,775, Cl. 156-308.000.

Holmstrom, F. Ross; and Hopkins, John B., to United States of America, Transportation. Microwave crash sensor for automobiles. 3,760,415, Cl. 343-7.0ed.

Holscher, Ebo Jan; and Osinga, Theo Jan, to N.V. Internationale Octrooi Maatschappy "Octropa". Nickel catalysts. 3,759,843, Cl. 252-459.000.

Holter, Godfrey George, to Smiths Industries Limited. Photoelectric readers. 3,760,162, Cl. 235-61.11e.

Holtschmidt, Hans: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honeywell Inc.: *See—*
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Honeywell Information Systems Inc.: *See—*
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Srivastava, Keshava, 3,760,356.

Hood Sailmakers, Inc.: *See—*
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Hope, William K. Yarn breaker and switch for spinning frames. 3,759,026, Cl. 57-80.000.

Hopee, Heinrich: *See—*
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Hopkins, John B.: *See—*
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Hoppe, Lutz: *See—*
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Horak, Edwin M., to Chemetron Corporation. Method of melting aluminum. 3,759,702, Cl. 75-63.000.

Horenkamp, John Joseph; Meise, Henry August, Jr.; and Taylor, George William. Switching system equipped for rotary line hunting. 3,760,118, Cl. 179-18.0ha.

Hornberger, William P.: *See—*
Dreyfus, Russell W.; and Hornberger, William P., 3,760,063.

Horstmann, Walter, to Bayer Aktiengesellschaft. Optical brightening agents. 3,759,900, Cl. 260-240.00b.

Horvath, William. Safety closure cap and container for dry and liquid contents. 3,759,411, Cl. 215-9.000.

Hotch, Frederick S., to Honeywell Inc. Open circuit detection apparatus for thermocouple circuits. 3,760,265, Cl. 324-51.000.

Hottle, Dwight E. Tire supporting device. 3,759,394, Cl. 211-23.000.

Hougendobler, Cleon W.: *See—*
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Houlihan, William J., to Sandoz-Wander, Inc. 2,3 or 4-Pyridine methanol-alpha-substituted or unsubstituted phenyls-alpha-(2 or 3-alkoxy-1-naphthyls). 3,759,934, Cl. 260-297.00b.

Howard, John, to Rotaflex Great Britain Limited. Electrical lighting installations. 3,760,133, Cl. 200-50.00b.

Howard, Richard I.: *See—*
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Howell, Norbert C.; Tischuk, Walter; and Welsh, Thomas M., to Robertson, H. H., Company. Mold apparatus for making foamed-in-place double-skin building panel. 3,759,479, Cl. 249-95.000.

Hoyler, Robert C., to Westinghouse Electric Corporation. Direction control in a vehicle control system. 3,760,421, Cl. 343-225.000.

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Hudak, Stephen F., to Ashland Oil, Inc. Water-dispersible polyurethanes based on polyesters prepared from carboxy-polyols. 3,759,873, Cl. 260-75.0nk.

Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. 8-Benzofurylmethyl-1,3,8-triazaspiro(4,5)decanes. 3,759,927, Cl. 260-293.580.

Huffman Manufacturing Company, The: *See—*
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Hughes Aircraft Company: *See—*
Burroughs, Robert S.; and Forbes, F. Douglas, 3,760,097.

Hughes, Charles Joseph: *See—*
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Duerdoth, Winston Theodore; and Hughes, Charles Joseph, 3,760,115.

Hughes, William J., to United States of America, Navy. Adapting circular shading to a truncated array of square elements. 3,760,345, Cl. 340-6.00s.

Hugon, Pierre: *See—*
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Huhn, Helmut; and Hoppe, Lutz, to Wolff & Co. Shrinkable film forming copolyamides prepared by copolymerizing ω-aminoundecanoic acid and the salt of a dicarboxylic acid and trimethylhexamethylene diamine. 3,759,877, Cl. 260-78.00a.

Hull Corporation: *See—*
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Hult, David R., to Vernco Corporation. Split end bell for motor housing. 3,760,209, Cl. 310-91.000.

Hundey, Doran J.; and Naru, Robert B., to Edmore Tool and Ginding, Inc. Trench compactor. 3,759,624, Cl. 404-133.000.

Hunkar, Denes B., to Hunkar Instrument Development Laboratories, Inc. Extruder control system. 3,759,648, Cl. 425-140.000.

Hunkar Instrument Development Laboratories, Inc.: *See—*
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Hurtado, Jean: *See—*
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Hurtig, Gunnar, III, to Kinetic Technology, Inc. Active filter network having a variable center frequency. 3,760,289, Cl. 330-51.000.

Huss Equipment Corporation: *See—*
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Husz, Charles, to Transco Inc. Insulated expansion joint. 3,759,008, Cl. 52-573.000.

Hutcheson, Guilford J.: *See—*
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Hutzenlaub, Armin S. P., to Kampf, Erwin, Maschinenfabrik. Web drive and web processing controls for web processing machines. 3,759,432, Cl. 226-42.000.

Huxsoll, Charles C.; Graham, Robert P.; and Weaver, Merle L., to United States of America, Agriculture. Process for peeling potatoes. 3,759,160, Cl. 99-233.500.

Hyde, Lawrence Edward: *See—*
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Ianaka, Saboro. Solenoid valve. 3,759,293, Cl. 137-598.000.

Iarossi, Frank J.; and Cowles, Walter C., to Esso Research and Engineering Company. Grid system for external insulation tanker. 3,759,209, Cl. 114-74.000.

ICI America, Inc.: *See—*
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ICI Australia Limited: *See—*
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Ikeda, Hidekatsu, to Amada Company Limited. Hydraulic actuating system for hydraulically operated bending machine. 3,759,144, Cl. 91-436.000.
Ikeda, Shojiro: *See—*
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Imbrecht, Jules, to Intissel. Machines for the continuous manufacture of cloth by superposing several layers of a textile web. 3,759,507, Cl. 270-69.000.
Immel, Richard H., to Sinclair-Koppers Company. Process and apparatus for pre-expanding polymer particles. 3,759,641, Cl. 425-4.000.
Imperial Chemical Industries Limited: *See—*
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Cross, William Telford; Steel, Margaret Lilian; and Trueman, Stephen Edward, 3,759,439.
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Woolcock, Alan; McDougall, Ian Leitch; and Barber, Anthony Clifford, 3,760,092.
Imris, Pavel. Variable-reluctance electrical generator. 3,760,205, Cl. 310-168.000.
Inaba, Shigeho: *See—*
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Ingalls, Edgar J. Crawfish peeler. 3,758,921, Cl. 17-71.000.
Ingenieurburs fur Angewandte Physik und Chemie: *See—*
Lang, Ludwig G., 3,759,499.
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Ingwalson, Raymond W., to Velsicol Chemical Company. Process for the production of elemental halogen. 3,760,067, Cl. 423-502.000.
Inmont Corporation: *See—*
Lehman, Donald Gregory, 3,759,850.
Inose, Fumiyuki; and Kita, Yuzo, to Hitachi, Ltd. Two-dimensional pattern normalizer. 3,760,357, Cl. 340-146.30h.
Inoue, Kiyoshi. Apparatus for making abrasive articles. 3,759,383, Cl. 209-111.500.
Inoue, Toshitsugu: *See—*
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Inoue, Wahei, to Kabushiki Kaisha Maekawa Seisakusho. Method of controlling high stage and low stage compressors. 3,759,052, Cl. 62-115.000.
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Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyoichi; Maeda, Akitoshi; and Morinaca, Fumihiko, to Kyorin Seiyaku Kabushiki Kaisha. Triazine derivatives. 3,759,911, Cl. 260-249.600.
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Irwin, Samuel N.; and Levine, Michael R., to Sycor, Inc. Source data entry terminal. 3,760,375, Cl. 340-172.500.
Iseli, Ernst: *See—*
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Ishizawa, Kazutomo; Nagata, Yasunori; and Uematsu, Yoshiaki. Apparatus for controlling the operating temperature of a continuous flat press. 3,758,968, Cl. 38-15.000.
Ishizumi, Kikuo: *See—*
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Isii, Sigeki; and Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Latching selector for selectively drawing out a single signal from among a plurality thereof. 3,760,358, Cl. 340-147.01p.
Ithaca Gun Company: *See—*
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Ito, Isau, to Nippondenso Kabushiki Kaisha. Structure of ball- and socket-joint used for coupling link members for driving a windshield wiper for vehicles. 3,759,555, Cl. 287-90.00d.
Itoh, Takayuki, to Takachiho Koeki Kabushiki Kaisha. Series-parallel shift register memory. 3,760,382, Cl. 340-173.0rc.
Iversen, Norman H. Cutting tool. 3,759,625, Cl. 408-188.000.
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Iwata, Haruo, to Waskino Kikai Kabushiki Kaisha. Cyclic motion control device for multicycle profiling machines. 3,759,120, Cl. 82-14.000.
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Jackson, James S.; and Lempio, Paul S., to Caterpillar Tractor Company. Swing motor mounting arrangement and method of disassembly. 3,758,941, Cl. 29-464.000.
Jackson, James W., Jr. Exercise garment. 3,759,510, Cl. 272-57.00r.
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Jacobs, Max Le Roy; and Higdon, Buster Watson, to Celanese Corporation. Process for inhibiting diketene polymerization. 3,759,955, Cl. 260-343.900.
Jaffe, Mary S., to General Electric Company. Solid state lamp assembly having conical light director. 3,760,237, Cl. 317-234.00r.
James, Daniel Shaw, to Du Pont de Nemours, E. I., and Company. Biscationic monoazo dyes for acid-modified nylons. 3,759,893, Cl. 260-149.000.
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Johnson, Louis W. Rock crusher. 3,759,453, Cl. 241-207.000.
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Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., to Sunkist Growers, Inc. Fruit slicer. 3,759,168, Cl. 99-545.000.
Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., to Sunkist Growers, Inc. Fruit slicer. 3,859,168, Cl. 99-545.000.
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Jones, Harry G., to Pat & Chuck Oil Well Equipment, Inc. Apparatus for automatically controlling weight-on-bit. 3,759,489, Cl. 254-173.00r.
Jones, James J. Ramp generator for producing ramp current during controlled rate discharge of stored capacitance. 3,760,191, Cl. 307-228.000.
Jones, John Leslie, Sr. Integral strap tissue napkin. 3,759,262, Cl. 128-290.00r.
Jones, Richard Sterling; and Stevenson, George Michael. Underground distribution system for utilities with meter pullbox. 3,760,234, Cl. 317-111.000.
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Juhlin, Sven-Erik, to Aktiebolaget Gustavsbergs Fabriker. Stand for supporting phonograph records. 3,759,395, Cl. 211-40.000.
Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, to Ciba-Geigy Corporation. Process for introducing a delta 5,6-double bond into a steroid. 3,759,899, Cl. 260-239.550.
Jullien-Davin, Jean, to Crouzet. Means for supporting and printing on ticket strip material. 3,759,173, Cl. 101-66.000.
Jullien-Davin, Jean, to Crouzet. Programmer for household electric machines with improved cam operating mechanism. 3,760,129, Cl. 200-38.00r.
Jutz, Christian; and Mueller, Werner, to Byk-Gulden Lomberg Chemische Fabrik GmbH. Nitrile compounds. 3,759,976, Cl. 260-465.000.
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Kaldenback, Kenneth H.; Kovals, John; and Pollard, John H., to United States of America, Army. Ultra-high vacuum isolation valve for volatile materials. 3,759,282, Cl. 137-68.000.
Kalopissis, Gregoire: *See—*
Boudouris, Georges; Kalopissis, Gregoire; Levesque, Jean-Luc; and Roussopoulos, Paul, 3,760,148.
Kaltenbach & Voigt: *See—*
Bareth, Erich, 3,758,948.
Kalvoda, Jaroslav: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,759,962.
Kamasuka, Teruo: *See—*
Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.
Kamborian, Jacob S.: *See—*
Brastow, Carl H., 3,759,219.
Kamborian, Jacob S.; and Caris, Costa, 3,758,904.
Kamborian, Jacob S.; deceased (by Godley, Lisbeth N.; Backa, Michael M.; and Kamborian, Jacob S., Jr.; executors); and Caris, Costa, to Kamborian, Jacob S. Method and mechanism for applying cement in the corner between an upper margin and an insole. 3,758,04, Cl. 12-142.00r.
Kamborian, Jacob S., Jr.: *See—*
Kamborian, Jacob S.; and Caris, Costa, 3,758,904.
Kammerer, William J.; and MacNeil, Robert L., to United States of America, Army, mesne. Photographic processing method. 3,759,712, Cl. 96-50.00r.
Kampf, Erwin, Maschinenfabrik: *See—*
Hutzenlaub, Armin S. P., 3,759,432.
Kanai, Hiromi: *See—*
Yamazaki, Eiichi; and Kanai, Hiromi, 3,760,214.
Yamazaki, Eiichi; and Kanai, Hiromi, 3,760,220.
Kane, Edward Michael, to General Cable Corporation. Continuous anneal of wire on pulp insulating process. 3,759,755, Cl. 148-11.50r.
Kane, Neil G.; deceased (by Kane, Virginia L.; administratrix). Manually-operated liquid dispenser. 3,759,426, Cl. 222-385.000.
Kane, Virginia L.: *See—*
Kane, Neil G., 3,759,426.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Watanabe, Kiyoshi; Tanaka, Tutomo; Hirakawa, Tamotsu; and Sasaki, Mamoru, 3,759,789.
Karita, Michiaki: *See—*
Ohsawa, Takashi; and Karita, Michiaki, 3,760,275.
Karkanen, Uno O. Foolproof dispenser of medical pills. 3,759,420, Cl. 221-288.000.
Karklys, Joseph, to Whirlpool Corporation. Dryer control system using moisture sensor and semiconductors to control cycle. 3,758,959, Cl. 34-45.000.
Karlsson, Ingemar: *See—*
Lindstrom, Bengt; Citron, Bengt; Nelenius, Erik; Karlsson, Ingemar; and Rosby, Sven-Olof, 3,759,434.
Kasahara, Keisuke; and Kabushiki Kaisha Maefava Seisakusho. Method of compressing chlorine gas. 3,759,348, Cl. 184-6.230.
Kashiwa, Norio: *See—*
Tokuzumi, Tadaichi; Fujimura, Hiroshi; and Kashiwa, Norio, 3,759,884.
Kaspers, Helmut: *See—*
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Grewe, Ferdinand; Schrader, Gerhard; Kaspers, Helmut; and Meiser, Werner, 3,760,085.
Katsumata, Osamu: *See—*
Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.
Kaufman, Herman S.: *See—*
Mueller, Max B.; Salatiello, Peter P.; and Kaufman, Herman S., 3,759,883.
Kaufmann, Reinhard: *See—*
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Kaufmann, Werner, to Staubli Ltd. Heddle frame lift mechanism. 3,759,298, Cl. 139-82.000.
Kaveckis, Joseph E.: *See—*
Erickson, Gerald L.; Jaszkowiak, David A.; and Kaveckis, Joseph E., 3,759,083.
Kawana, Masashi; Saegusa, Makoto; Ohsugi, Kenzo; and Nohara, Naohiro, to Kawasaki Steel Corporation. Method and a device for slag-removal. 3,759,701, Cl. 75-61.000.
Kawano, Toru, to Toyo Kogyo Company, Limited. Rock drill supporting device for controlling the drilling direction. 3,759,470, Cl. 248-2.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Terai, Kiyoshi, 3,759,207.
Kawasaki, Mitsuyasu: *See—*
Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, 3,759,718.
Kawasaki Steel Corporation: *See—*
Kawana, Masashi; Saegusa, Makoto; Ohsugi, Kenzo; and Nohara, Naohiro, 3,759,701.
Kawaziri, Kazuhiro: *See—*
Kitamoto, Tatsuji; Aonuma, Masashi; and Kawaziri, Kazuhiro, 3,759,796.
Kawazoe, Toshinobu. Temperature detecting wire structure. 3,760,319, Cl. 338-26.000.
Kayaba Kogyo Kabushiki Kaisha: *See—*
Shioda, Shigeru; Ogasahara, Fumio; and Otomo, Minoru, 3,759,042.
Keedy, David E.: *See—*
Dawson, Harry J.; Hoftiezer, Wallace A.; Keedy, David E.; Mangus, Ervin E.; Patton, Eugene K.; and Grandfield, Joseph P., 3,759,323.
Keen, Rodway W. Pet watering apparatus. 3,759,228, Cl. 119-79.000.
Keenan, James P.: *See—*
Bonazoli, Robert P.; and Keenan, James P., 3,759,601.
Keeney, Cecil M., to Equitable Equipment Company, Inc. Multi-cargo barge. 3,759,208, Cl. 114-73.000.
Kehl, Lawrence Joseph; Triner, Irvin Richard; and Janis, Robert Gerald, to Bunker-Ramo Corporation, The. Detachable electrical heating griddle. 3,760,156, Cl. 219-447.000.
Keich, John D.; and Laliberte, George A., to United States of America, Army, mesne. Cable actuator. 3,759,562, Cl. 295-83.00a.
Keim, Wilhelm: *See—*
Bauer, Ronald; Chung, Harold; Keim, Wilhelm; and Van Zwet, Henry, 3,759,889.
Keister, Douglas W.; and Leibfreid, Russel B. Emergency warning system. 3,760,349, Cl. 340-33.000.
Kelley, Philip C., to Goodrich, B. F., Company, The. Rubber-resin network blends and method of making same. 3,760,035, Cl. 260-876.00r.
Kellogg, Frank: *See—*
Czarnecki, Stephen J.; Evers, Harry G.; Kellogg, Frank; Newcum, William W.; Vogel, Richard F.; and Woodward, John W., 3,760,117.
Kellogg, Frank, to GTE Automatic Electric Laboratories Incorporated. Crosspoint switch allotter release detection circuit. 3,760,119, Cl. 179-18.0ge.
Kelly, John G., to United States of America, Atomic Energy Commission. Electron beam generator. 3,760,286, Cl. 328-228.000.
KemaNord AB: *See—*
Larsson, Karl-Georg, 3,759,815.
Kemp, John Curtis, to International Business Machines Corporation. Distributed microprogram control in an information handling system. 3,760,369, Cl. 340-172.500.
Kempf, Dennis D., to FMC Corporation. Vortex pumps. 3,759,628, Cl. 415-213.00a.
Kendall Company, The: *See—*
Samour, Carlos M., 3,759,982.
Kennecott Copper Corporation: *See—*
Foard, James E., 3,759,501.
Van Byken, Harold B., II; and Brandt, Denard A., 3,759,014.
Kent, Cecil, to Creators Limited. Glazing window or windscreen openings, particularly in vehicle bodies. 3,759,004, Cl. 52-400.000.
Kenyon, Andre J., to Schaefer Corporation. Refrigerated display cabinet. 3,759,059, Cl. 62-246.000.
Kerber, Marvin C.: *See—*
Zimmer, Russell D.; and Kerber, Marvin C., 3,760,422.
Kesling, Peter C. Elastomeric orthodontic device. 3,758,947, Cl. 32-14.00a.
Kewanee Oil Company: *See—*
DuRose, Arthur H.; and Stern, Robert L., 3,759,803.
Khlebutin, Gleb Sergeevich. Chess game progress demonstration device. 3,760,404, Cl. 340-323.000.
Khrichev, Vladimir Andreevich: *See—*
Trandin, Georgy Gavrilovich; Khrichev, Vladimir Andreevich; Sykalo, Evgeny Petrovich; Burakov, Valery Petrovich; and Krasnobaev, Vasily Iliich, 3,759,166.
Kidde, Walter, & Company, Inc.: *See—*
Smith, Irwin M., 3,759,005.
Kiefer, Edward J.; and Rogers, Dale W., to Halophane Company, Incorporated, mesne. Electric system. 3,760,226, Cl. 315-227.000.
Kienast, Gerhard: *See—*
Langmesser, Paul Werner; Volz, Hans G.; and Kienast, Gerhard, 3,760,058.
Kieser, Robert J.; Bass, John R.; and Donovan, John E., to United States of America, Navy. High-power underwater electroacoustic transducer for the infrasonic and low audio-frequency range. 3,760,346, Cl. 340-8.00r.
Kieser, Robert J.; and Tims, Allan C., to United States of America, Navy. H_{33} standard reference hydrophone. 3,760,348, Cl. 340-10.000.
Kieserling, Th., & Albrecht: *See—*
Hartkopf, Heinz, 3,759,077.
Kikumoto, Syoichi: *See—*
Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.
Kim, Dong H.; and Santilli, Arthur A., to Amesican Home Products Corporation. Preparation of pyrimido(5,4-C) (1,5) benzoxazepin-5(11H)-ones and intermediates. 3,759,922, Cl. 260-256.0yf.
Kim, Young D.: *See—*
Formaini, Robert L.; and Kim, Young D., 3,759,853.
Kimura, Keitaro: *See—*
Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.
Kinder, Gordon T.: *See—*
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Kinetic Technology, Inc.: *See—*
Hurtig, Gunnar, III, 3,760,289.

King, Cary Judson, III; Kumar, Romesh; and Lynn, Scott, to University of California, The Regents of the. Vapor condensation system and method. 3,759,047, Cl. 62-66.000.

King, Ellis Gray: *See—*
Felicetta, Vincent F.; and King, Ellis Gray, 3,759,826.

King, Robert W. Flexible fitting for lawn sprinkler systems. 3,759,445, Cl. 239-201.000.

Kingsley, William: *See—*
O'Connell, Richard P.; Kingsley, William; and Zucker, Edwin, 3,759,611.

Kinney, A. M., Inc.: *See—*
Spaite, Paul W., 3,759,196.

Kippenhan, B. William, to International Business Machines Corporation. Gas panel display having monogram type characters with matrix addressable strokes. 3,760,403, Cl. 340-336.000.

Kirtz, Douglas H., to Nicholas Equipment Co. Grinding machine. 3,758,993, Cl. 51-80.0bs.

Kiscaden, Roy W., to Westinghouse Electric Corporation. Over temperature protection system for a gas turbine. 3,759,037, Cl. 60-39.140.

Kishino, Shigeo: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,760,044.

Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, to Bayer Aktiengesellschaft. O-Phenyl-S-alkyl-N-alkyl-phosphoroamido-thiolates. 3,760,043, Cl. 260-951.000.

Kiss, Barnabas: *See—*
Podmaniczky, Andras; and Kiss, Barnabas, 3,759,619.

Kita, Yuzo: *See—*
Inose, Fumiyuki; and Kita, Yuzo, 3,760,357.

Kitamoto, Tatsuji; Aonuma, Masashi; and Kawaziri, Kazuhiro, to Fuji Photo Film Co., Ltd. Method of reproducing magnetization pattern. 3,759,796, Cl. 204-12.000.

Kitamura, Hiroshi: *See—*
Sato, Koichi; Niki, Akira; Kitamura, Hiroshi; and Morimoto, Masanobu, 3,760,031.

Kitamura, Masaji: *See—*
Kunii, Kazuo; Nishida, Reijiro; Tanimura, Thoru; Kitamura, Masaji; and Okamoto, Shinya, 3,759,693.

Kitamura, Sadao: *See—*
Nomoto, Yoshihisa; Oguino, Masanori; Ueda, Seiichi; and Kitamura, Sadao, 3,760,196.

Kitamura, Yoshiaki, to Kabushiki Kaisha Daini Seikosha. Manipulator device for use with industrial robots. 3,759,563, Cl. 294-88.000.

Kitani, Teruo: *See—*
Furuhashi, Michio; Kitani, Teruo; and Sasaki, Reiichi, 3,760,095.

Kittke, Roger H., to Rohm & Haas Company. Caulking composition comprising polymer having addition polymerized backbone having carboxyl groups esterified with drying oil fatty acid hydroxyamide. 3,759,915, Cl. 260-41.00r.

Kitz, Norbert: *See—*
Drage, James John; and Kitz, Norbert, 3,760,363.

Kleimeyer, Vernon T.: *See—*
Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; Singer, Paul A.; and Zimmer, Ernest B., 3,760,160.

Kleist, Dale; and Buchanan, Carl S., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing fibers from glass. 3,759,680, Cl. 65-6.000.

Klemenhagen, Dale A.: *See—*
Snyder, Marion F.; Lindquist, William C.; and Klemenhagen, Dale A., 3,759,022.

Klimek, Boleslaw, to Berg Manufacturing Company, The. Parking brake control valve. 3,759,584, Cl. 303-71.000.

Klipfontein Organic Products Corporation, Limited: *See—*
Droste, Theodore Carl, 3,760,064.

KLM Company, The: *See—*
Childs, Edmund; and Ostrowski, Raymond, 3,759,652.

Klobas, Ivan: *See—*
Stier, Barrie J.; Ferrara, Peter J.; and Klobas, Ivan, 3,759,480.

Klotmann, Georg; and Mueller, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of β-hydroxy carbonyl compounds and/or α-unsaturated carbonyl compounds. 3,759,929, Cl. 260-293.880.

Kluger, Alois: *See—*
Vering, Antonius; Kluger, Alois; and Eiring, Karl, 3,759,369.

Kmecak, Ronald A.: *See—*
Patrick, Ralph E.; Kmecak, Ronald A.; and Kovach, Stephen M., 3,760,023.

Kmiecik, James Edward: *See—*
Cuscurida, Michael; and Kmiecik, James Edward, 3,759,971.

Knapsack Aktiengesellschaft: *See—*
Staendeke, Horst, 3,760,001.

Knaus, Heimo A. Dental floss holder. 3,759,273, Cl. 132-92.00r.

Kneen, Eric, to Kurth Malting Corporation. Method of malting. 3,759,792, Cl. 195-20.000.

Knight, Rex, 40% to Lee, Raymond, Organization, Inc., The. Snake bite preventing device. 3,758,963, Cl. 36-2.00r.

Knobelsdorff Instruments Incorporated: *See—*
Green, Aaron F., 3,760,185.

Knoll A.G. Chemische Fabriken: *See—*
Treiber, Hans-Joerg; and Zimmermann, Frank, 3,759,974.

Kobashi, Uichiro, to Aisin Seiki Kabushiki Kaisha. Safety valve assembly. 3,759,288, Cl. 137-498.000.

Kobayashi, Akira: *See—*
Koga, Ikumi; Kobayashi, Akira; and Ikeda, Tsuneo, 3,759,694.

Kobayashi, Nobuo: *See—*
Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, 3,760,037.

Kobayashi, Tsuyoshi: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.

Kobe, Inc.: *See—*
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Kobe Steel, Ltd.: *See—*
Kunii, Kazuo; Nishida, Reijiro; Tanimura, Thoru; Kitamura, Masaji; and Okamoto, Shinya, 3,759,693.

Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Photographic camera provided with electrically controlled shutter. 3,759,156, Cl. 95-31.0ac.

Koch, Paul, to Olympia Werke AG. Apparatus for transporting a type support, carriage in typewriters or similar office machines. 3,759,362, Cl. 197-82.000.

Koch, Ronald N.: *See—*
Medwig, William J.; and Koch, Ronald N., 3,759,100.

Koehring Company: *See—*
Brown, Gaylord W.; and Adams, Gary A., 3,759,770.

Koenig, Kenneth W.: *See—*
Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,759,168.
Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,859,168.

Koepke, Earl H., to Harter Corporation. Segmented sling seat frame with stabilizing connection means having concealed adjustment for facilitating coverage thereof. 3,759,572, Cl. 297-452.000.

Koert, Hubert: *See—*
Bader, Erich; and Koert, Hubert, 3,759,774.

Koga, Ikumi; Kobayashi, Akira; and Ikeda, Tsuneo, to Nippon Steel Corporation. Method for sintering to-be-sintered material. 3,759,694, Cl. 75-5.000.

Koga, Yoshiro: *See—*
Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, 3,760,235.

Kogo, Hiroshi; and Tanabe, Kuniyuki, to Nissan Motor Company. Time division multiplex transmission system. 3,760,109, Cl. 179-15.0ba.

Kogo, Masanori; and Honda, Hisashi, to Nippon Electric Company, Limited. Variable resistor. 3,760,322, Cl. 338-137.000.

Kokoyama, Masanori: *See—*
Mifune, Hideo; Ishii, Akira; Kokoyama, Masanori; and Yamazoe, Toshihiro, 3,759,658.

Kolaian, Jack H.: *See—*
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., 3,759,326.

Koleske, Joseph V.: *See—*
Critchfield, Frank E.; and Koleske, Joseph V., 3,760,034.

Kollar, Ernest P.: *See—*
Janssen, Donovan M.; Kollar, Ernest P.; Stahlberg, Eugene G.; and Tiao, Shui-Li, 3,759,465.

Koln, Jan: *See—*
Baxlien, Asbjorn; and Koln, Jan, 3,759,937.

Komaki, Shojiro. Electronic timepiece with a time signalling device. 3,759,029, Cl. 58-38.000.

Komatsu, Koichi, to Atsugi Motor Parts Co. Ltd. Fluid shock absorbing bumper. 3,759,558, Cl. 293-30.000.

Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi. Process for manufacture of polysaccharides with antitumor action. 3,759,896, Cl. 260-209.000.

Komatsu, Susumu: *See—*
Yamaguchi, Goru; Komatsu, Susumu; and Fukumoto, Tetsuo, 3,759,844.

Konet, Henry, to Neilford Leasing, Inc. Vehicle heater. 3,759,244, Cl. 126-110.00r.

Konev, Vyacheslav Alexandrovich; and Ryaboi, Vladimir Ilich. Methods for flotation of ores. 3,759,386, Cl. 209-167.000.

Kong, Victor, to Tektronix, Inc. Video amplifier for a color television apparatus. 3,760,099, Cl. 178-5.40r.

Kongelka, Robert M., to Superior Valve Company. Pressure regulator. 3,759,294, Cl. 137-612.100.

Konger, Alfred P., to Signode Corporation. Apparatus for heat-shrinking a plastic film on a load. 3,760,154, Cl. 219-388.000.

Koninklijke Fabriek Inventum N.V.: *See—*
Berkhoodt, Paul G. C. A., 3,759,241.

Koplow, Harold Stanley: *See—*
Wang, An; Koplow, Harold Stanley; and Ho, Shu-Kuang, 3,760,171.

Korch, Benning, to Burris Industries, Incorporated. Seat construction. 3,759,571, Cl. 297-445.000.

Kornylak, Andrew T. Loading conveyor for elevator. 3,759,364, Cl. 198-20.000.

Korobeinikov, Jury Mikhailovich: *See—*

Trofimov, Igor Dmitrievich; Korobeinikov, Jury Mikhailovich; Pavlov, Vadim Alexandro; and Shevyakov, Lev Nikolaevich, 3,759,034.

Korpela, Viejo Gunnar, to Oy Suomen Vanutehdas-Finnwad Ltd. Wheel chair with pivoted hand bar. 3,759,544, Cl. 280-289.000.

Korstvedt, Harald O. Breading apparatus. 3,759,218, Cl. 118-18.000.

Kortenhaus, Dieter, to NSM Apparatebau GmbH. Selective retrieval and memory system. 3,760,367, Cl. 340-172.500.

Kosonocky, Walter Frank, to RCA Corporation. Input circuits for charged-coupled circuits. 3,760,202, Cl. 307-304.000.

Kotani, Tsunehiro: *See*—
Fukui, Yukimasa; Kotani, Tsunehiro; and Ozeki, Toshitsugu, 3,759,862.

Kothmann, Gilbert C. Safety trailer hitch. 3,759,548, Cl. 280-511.000.

Kovach, Stephen M.: *See*—
Patrick, Ralph E.; Kmecak, Ronald A.; and Kovach, Stephen M., 3,760,023.

Kovals, John: *See*—
Kaldenback, Kenneth H.; Kovals, John; and Pollard, John H., 3,759,282.

Koziol, Konrad; and Zenk, Baptist, to Conradty, C. Anode construction for amalgam high load cells. 3,759,812, Cl. 204-250.000.

Krabec, James A.: *See*—
Provenzano, Joseph Charles; Hiestand, David F.; and Krabec, James A., 3,759,082.

Kraft, Robert E.: *See*—
Glass, Clifford A.; Kraft, Robert E.; and Schmidt, Edward W., 3,759,399.

Kral, Fred G., to Bell & Howell Company. Magnetically striped cards for use in a speed machine. 3,760,164, Cl. 235-61.12n.

Krambrock, Wolfgang: *See*—
Muschelknautz, Edgar; and Krambrock, Wolfgang, 3,759,578.

Kramer, Bruno: *See*—
Czekay, Arno; Kramer, Bruno; and Weiden, Hans, 3,759,863.

Krasienko, Chester A.; and Harmeyer, Stanley G., to General Electric Company. Transformer with improved arrangement for providing a grounding connection. 3,760,314, Cl. 336-192.000.

Krasnobaev, Anna Nikolaevn: *See*—
Trandin, Georgy Gavrilovich; Khrichev, Vladimir Andreevich; Sykalo, Evgeny Petrovich; Burakov, Valery Petrovich; and Krasnobaev, Vasily Iliich, 3,759,166.

Krasnobaev, Vasily Iliich: *See*—
Trandin, Georgy Gavrilovich; Khrichev, Vladimir Andreevich; Sykalo, Evgeny Petrovich; Burakov, Valery Petrovich; and Krasnobaev, Vasily Iliich, 3,759,166.

Kraychy, Stephen: *See*—
Marsheck, William J.; and Kraychy, Stephen, 3,759,791.

Krelz, Otto; and Raal, Stefan, to Demag Aktiengesellschaft. Manipulator for polygonal cross-section fillets, particularly cast copper bars. 3,759,401, Cl. 214-1.0qg.

Krenzer, John, to Velsicol Chemical Corporation. Dialkyl acetals of heterocyclic ureidoacetalidehyde. 3,759,940, Cl. 260-306.800.

Kresan, Lawrence J.: *See*—
Franchinot, Paul G.; and Kresan, Lawrence J., 3,759,178.

Kressin, Ivan K., to United States of America, Atomic Energy Commission. Separation of mercury from aqueous solution. 3,760,057, Cl. 423-463.000.

Kretschmer, Ingo; and Mursic, Marjan, to Messer Griesheim G.m.b.H. Submerged-arc welding with strip electrode and foamed flux of .4-.8 Kg/1. 3,760,140, Cl. 219-73.000.

Krogseng, Gerald P.: *See*—
Borer, Albert; and Krogseng, Gerald P., 3,760,049.

Krolikowski, Walter F.; and Lund, Donald F., to Cogar Corporation. FET memory chip including FET devices therefor and fabrication method. 3,760,384, Cl. 340-173.00r.

Krouzian, Kersan K. Dental ejector equipment. 3,758,950, Cl. 32-33.000.

Kubota, Masatoshi: *See*—
Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, 3,760,235.

Kuchling, Peter Mathis: *See*—
Simmons, Roger Cleary; Boyd, Horace Edward; and Kuchling, Peter Mathis, 3,758,938.

Kudamatsu, Akio: *See*—
Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.

Kuecken, John A., to International Telephone and Telegraph Corporation. Mobile antenna mounting assembly. 3,760,423, Cl. 343-715.000.

Kugelnik, Herwig Werner; and Shank, Charles Vernon, to Bell Telephone Laboratories, Incorporated. Integrated feedback laser. 3,760,292, Cl. 331-94.50c.

Kuhlthau, Hans-Peter; and Lehment, Klaus-Friedrich, to Bayer Aktiengesellschaft. Methine dyestuffs. 3,759,902, Cl. 260-240.800.

Kuhne, Rudolf; Hamal, Heinrich; Geissler, Georg; Herbst, Willy; and Ribka, Joachim, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Pigment mixture of polar and nonpolar symmetrical/asymmetrical disazo dyestuffs. 3,759,731, Cl. 10-288.00q.

Kumagai, Seiji: *See*—
Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, 3,759,758.

Kumar, Romesh: *See*—
King, Cary Judson, III; Kumar, Romesh; and Lynn, Scott, 3,759,047.

Kunii, Kazuo; Nishida, Reijiro; Tanimura, Thoru; Kitamura, Masaji; and Okamoto, Shinya, to Kobe Steel, Ltd. Method of producing reduced iron ore pellets. 3,759,693, Cl. 75-3.000.

Kunkel, Wulf B.: *See*—
Ehlers, Kenneth W.; Kunkel, Wulf B.; and Baker, William R., 3,760,225.

Kunstle, Gerhard; and Spes, Hellmuth, to Wacker-Chemie G.m.b.H. Process for continuously producing sorbic acid by converting ketene with crotonaldehyde. 3,759,988, Cl. 260-526.00n.

Kuntz, Francis A., Jr., to Global Marine, Inc. Controllable pitch tunnel thruster for ship positioning. 3,759,211, Cl. 114-148.000.

Kuntzleman, Harry C.: *See*—
Dailey, Jack R.; Kuntzleman, Harry C.; and Mitchell, George E., 3,760,368.

Kurilenko, Viktor Georgievich: *See*—
Ermakov, Boris Nikolaevich; and Kurilenko, Viktor Georgievich, 3,759,832.

Kurth Malting Corporation: *See*—
Kneen, Eric, 3,759,792.

Kurtzberg, Jerome M.; Rosenfeld, Jack L.; and Villani, Raymond D., to International Business Machines Corporation. Multiprocessing computing system with task assignment at the instruction level. 3,760,365, Cl. 340-172.500.

Kurtzig, Arjeh Jehuda: *See*—
Dixon, Melvyn; and Kurtzig, Arjeh Jehuda, 3,759,745.

Kuruin, Lev Nikolaevich: *See*—
Polshikov, Ivan Vasilievich; Kuruin, Lev Nikolaevich; and Titarenko, Alexandr Timofeevich, 3,759,112.

Kutscher, Horst: *See*—
Diener, Arnulf; and Kutscher, Horst, 3,759,700.

Kyorin Seiyaku Kabushiki Kaisha: *See*—
Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyoichi; Maeda, Akitoshi; and Morinaca, Fumihiko, 3,759,911.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See*—
Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,759,790.

Kysor Industrial Corporation: *See*—
Graber, Walter P., 3,759,054.
Graber, Walter P., 3,759,056.

La Plante, Lionel J.: *See*—
Scrivo, Leonard; La Plante, Lionel J.; Chumenti, Vincent A.; and Rubin, Gotthard George, 3,758,951.

Ladewig, Glen R.: *See*—
Gammill, Benny B.; Ladewig, Glen R.; and Ham, George E., 3,760,006.

Ladney, Michael, Jr. Mold for forming plastic foam parts. 3,759,644, Cl. 425-129.000.

Lahn, Gerard, to Esso Research and Engineering Company. Integrated fluid coking/gasification process. 3,759,676, Cl. 48-206.000.

Laitin, William W.: *See*—
Hoffman, Charles R.; and Laitin, William W., 3,760,380.

Lakeberg, Warren D., to United States Steel Corporation. Coke oven door cleaner. 3,758,910, Cl. 15-93.00a.

Laliberte, George A.: *See*—
Keich, John D.; and Laliberte, George A., 3,759,562.

Lambright, John E.: *See*—
Schmitz, Lawrence S.; Lambright, John E.; and Lewis, Arthur M., 3,760,388.

Lamon, Robert W., to Eastman Kodak Company. 4-Thiouracil compounds, process for their preparation and their use in photography. 3,759,908, Cl. 260-251.000.

Lamy, Jacques Edouard Jean, to Societe d'Etude du Transport et de la Valorisation des Gaz Naturels du Sahara S. E. G. A. N. S. Method of producing composite concrete-steel pipes and joints and pipe and joint obtained by means of said method. 3,758,940, Cl.29-460.000.

Landauer, Le Roy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, to American Can Company. Roll-through method for electrocoating can ends. 3,759,810, Cl. 204-181.000.

Landry, Norman Richard: *See*—
Mason, Robert Jean; and Landry, Norman Richard, 3,760,305.

Lane, William A.; and Meissner, Konrad E., to Filper Corporation. Package separator and corner cutting die for individual. 3,759,122, Cl. 83-24.000.

Lang, Ludwig G., to Ingenieurburs fur Angewandte Physik und Chemie. Apparatus for the decontamination of internal combustion engine exhaust gases. 3,759,499, Cl. 261-41.00d.

Langecker, Erhard. Apparatus for applying labels onto hollow bodies. 3,759,643, Cl. 425-109.000.

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Langer, Horst G.: *See*—
Asadorian, Arthur A.; Langer, Horst G.; and Funsher, Jeffrey A., 3,760,003.

Langmesser, Martha Adel Hildegard: *See*—
Langmesser, Paul Werner; Volz, Hans G.; and Kienast, Gerhard, 3,760,058.

Langmesser, Paul Werner; deceased (by Langmesser, Martha Adel Hildegard; heir); Volz, Hans G.; and Kienast, Gerhard, to Farbenfabriken Bayer Aktiengesellschaft. Process leading to the production of titanium dioxide pigments with a high degree of whiteness.3,760,058, Cl. 423-85.000.

Lankard, John R.; and Sorokin, Peter P., to International Business Machines Corporation. U-switch for synchronizing mode-locked laser pulse trans with external events. 3,760,295, Cl. 331-94.500.

Larkfeldt, Birger; Akesson, Stellan; and Josefson, Ingmar, to Aktiebolaget Svenska Flaktfabriken. Cross-talk attenuating supply air and exhaust air device in ventilation installations. 3,759,157, Cl. 98-37.000.

Larkin, John M., to Texaco Inc. Preparation of 1,3-dinitroalkanes. 3,760,012, Cl. 260-644.000.

Larsen, Nels B.: *See—*
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Larsen, Robert R.: *See—*
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Larson, Floyd L.: *See—*
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,760,159.

Larsson, Evald: *See—*
Lundmark, Lars-Erik; and Larsson, Evald, 3,759,304.

Larsson, Karl-Georg, to KemaNord AB. Electrode assembly. 3,759,815, Cl. 204-268.000.

Lashley, George D. Shoe shine apparatus. 3,758,907, Cl. 15-31.000.

Lasser, Howard G.; and Almaula, Bipin C., to United States of America, Army. Anodic film for electron multiplication. 3,760,216, Cl. 313-94.000.

Lau, Edward: *See—*
Wolf, Edgar; Lau, Edward; and Eisenkramer, Arthur, 3,760,391.

Laue, Eckhard, to Dual Gebrueder Steidinger. Magnetic pick up with flux bridge and replaceable stylus. 3,760,125, Cl. 179-100.4ik.

Laufer, Helmut, to Dual Gebrueder Steidinger. Switching device for a tone band drive. 3,760,136, Cl. 200-61.130.

Lawless, William N.: *See—*
Forker, Ray B., Jr.; and Lawless, William N., 3,760,325.

Lawrence, John, to Bell Canada Northern Electric Research Limited. Preferential etching of silicon. 3,759,768, Cl. 156-17.000.

Layman, Stuart F.: *See—*
Daly, Patrick J.; Grogg, William E.; Layman, Stuart F.; Orlando, Harold J.; Perry, James E.; and Van Derlaske, Dennis P., 3,760,181.

Layton, Lawrence Klinge, to Du Pont de Nemours, E. I., and Company. Use of an open-barrel screw press dryer for chain-branching an EPDM copolymer. 3,759,917, Cl. 260-79.5pr.

Lazarus, David Mendel: *See—*
Arbuckle, Kenneth Harold; and Lazarus, David Mendel, 3,760,033.

Lazarus, Milton; and Larsen, Nels B. Fire-kindling device and method of using same. 3,759,675, Cl. 44-38.000.

Le Bris, Louis; Michelet, Daniel; and Rakoutz, Michel, to Rhone-Poulenc S.A. Electrochemical oxidation of thallium derivatives. 3,759,804, Cl. 204-93.000.

Le Creurer, Maurice: *See—*
Regneault, Marcel; and Le Creurer, Maurice, 3,759,239.

Le Douarec, Jean-Claude: *See—*
Beregi, Laszlo; Hugon, Pierre; and Le Douarec, Jean-Claude, 3,759,979.

Leahy, Henry C., to Westinghouse Electric Corporation. Reduced loss phase shifter utilizing Faraday rotator. 3,760,300, Cl. 333-31.00a.

Leber, Jean-Pierre, to Sandoz Ltd.; a/k/a Sandoz AG. Cis-phosphoric acid amide esters. 3,760,039, Cl. 260-941.000.

Ledges, George E.: *See—*
Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,760,383.

Lee, Harold Barry, to Bonds-Wear Pty. Limited. Apparatus for edge finishing body opening in garments. 3,759,199, Cl. 112-121.120.

Lee, Jin W., to Medcor, Inc. Cardiac-autopacer with variable refractory nonlinear feedback latching reset and voltage increasing circuits. 3,759,266, Cl. 128-419.00p.

Lee, Raymond, Organization, Inc., The: *See—*
Bostick, John H.; and Bostick, Ivory S., 3,759,356.
Knight, Rex, 3,758,963.

Lee, Ronald Harvey David Frank, to Cooper, McDougall & Robertson Limited. Piston valve syringe gun. 3,759,425, Cl. 222-309.000.

Leeds & Northrup Company: *See—*
Bay, Theodosios, 3,759,659.

Leeds, Morton W.; and Szur, Elex J., to Airco, Inc. Tranquilizer. 3,760,086, Cl. 424-285.000.

Leesona Corporation: *See—*
Palmer, Nigel I., 3,759,748.

Leger, Andre: *See—*
de Lavenne, Hubert; and Leger, Andre, 3,758,911.

Leger, Marc Jean Pierre; Lerouge, Claude Paul Henri; and Regnier, Marc Andre, to International Standard Electric Corporation. Marker circuit for a switching stage equipped with integrated dynamic memory switches. 3,760,361, Cl. 340-166.00r.

Legrand, Michel: *See—*
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Lehman, Donald Gregory, to Inmont Corporation. Lacquer emulsion composition for lithographic plates. 3,759,850, Cl. 260-17.4st.

Lehment, Klaus-Friedrich: *See—*
Kuhlthau, Hans-Peter; and Lehment, Klaus-Friedrich, 3,759,902.

Leibfreid, Russel B.: *See—*
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Leland Stanford Junior University, The Board of Trustees of: *See—*
Quate, Calvin F., 3,760,172.

Lemelson, Jerome H.; and Nutting, William. Activity doll. 3,758,982, Cl. 46-119.000.

Lemieux, Raymond Urgel; and Chin, Clinton Gordon, to R & L Molecular Research Ltd. 7-[O-,M-and P-(2'-amino-ethoxy) phenylacetamide]-3-(substituted methyl)-ceph-3-em-4-carbohydrates. 3,759,905, Cl. 260-243.00c.

Lemmers, Johannes W. F. M.: *See—*
Aaron, Stuart W.; and Lemmers, Johannes W. F. M., 3,759,669.

Lempio, Paul S.: *See—*
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Leonard, Paul L., to TRW Inc. Operational amplifier. 3,760,288, Cl. 330-30.00d.

Leopiktie, Stephanus F.; and Flier, Ronald Jacob, to Ralston Purina Company. Process of making a textured, expanded food product. 3,759,715, Cl. 426-351.000.

Lerouge, Claude Paul Henri: *See—*
Leger, Marc Jean Pierre; Lerouge, Claude Paul Henri; and Regnier, Marc Andre, 3,760,361.

Levamaki, Reiji; Vehvilainen, Mikko; and Suhonen, Tapani. Hollow charge having a directed explosive effect. 3,759,182, Cl. 102-23.000.

Lever Brothers Company: *See—*
Easton, Donald Bannerman James; Rennie, George Kerr; and Storer, Christopher Charles, 3,759,833.
Gunson, Sam; Heyes, Alan; and Sale, Anthony John Hanson, 3,759,723.
Parke, John Pedlow; and Wilde, Raymond John, 3,759,834.
Robb, Derek John Mac Donald; and Samuel, John Raymond, 3,759,846.

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Levin, Ezra: *See—*
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Levine, Michael R.: *See—*
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Levinsohn, Richard; and Jervis, James E., to Raychem Corporation. Hydraulic coupling with metallic sealing member. 3,759,552, Cl. 285-175.000.

Levinson, Melvin L. Power supply for heating magnetron. 3,760,291, Cl. 331-86.000.

Levy, George D., to Acla, Inc. Lighting device. 3,760,177, Cl. 240-81.0bs.

Lewis, Arthur M.: *See—*
Schmitz, Lawrence S.; Lambright, John E.; and Lewis, Arthur M., 3,760,388.

Lewis, Edward L.: *See—*
Berkovits, Barouh V.; Denouter, Pieter J.; and Lewis, Edward L., 3,760,332.

Lewis, Morton, to Swift & Company. Phosphonated polyoxyalkylene ethers. 3,760,038, Cl. 260-932.000.

Lewis, Richard B.: *See—*
Maksymiak, John; and Lewis, Richard B., 3,759,222.

Libbey-Owens-Ford Company: *See—*
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Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
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Liebscher, Anton I.: *See—*
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Lifson, Burton S., to Continental-Wirt Electronics Corporation. Insulated wire wound resistor. 3,760,323, Cl. 338-174.000.

Lilly, Eli, and Company: *See—*
Aronson, Theodore F., 3,759,365.
Paget, Charles J., 3,759,921.
Sharabash, Moustafa M., 3,759,089.

Limberger, Bruno. Supporting frame. 3,759,598, Cl. 312-257.00a.

Lincoln, Frank H., Jr.; and Pike, John E., to Upjohn Company, The. 5,6-Trans PGE_2. 3,759,978, Cl. 260-468.00d.

Lincoln, Lewis L.; and Heseltine, Donald W., to Eastman Kodak Company. Arylhydrazonalkyl quaternary salts. 3,759,901, Cl. 260-240.00g.

Lindau, John H.: *See—*
Putney, David H.; Lindau, John H.; and West, Charles L., 3,759,318.

Lindberg, John E. Overheat detection system. 3,760,393, Cl. 340-229.000.

Linde Aktiengesellschaft: *See—*
Nasser, Gamal El Din; and Waldmann, Hans, 3,759,322.

Lindeboom, Herman, to Ingersoll-Rand Company. Fluid seal. 3,759,532, Cl. 277-27.000.

Linder, Jerome; Mattner, Paul G.; and Salmond, William G., to Sandoz-Wander, Inc. Process for the preparation of 1-substituted-phenyl-2(1H)-quinazolinones. 3,759,920, Cl. 260-251.0qb.

Lindquist, William C.: *See—*
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Lindstrom, Bengt; Citron, Bengt; Nelenius, Erik; Karlsson, Ingemar; and Rosby, Sven-Olof, to Aktiebolaget Svenska Flaktfabriken. Threading mechanism. 3,759,434, Cl. 226-91.000.

Linemaster Switch Corporation, The: *See—*
Dibonaventura, Alfred R.; and Ford, Leroy H., Jr., 3,759,115.

Link, Manfred, to Triumph Werke Nuernberg A.G. Carriage return and line space mechanism. 3,759,361, Cl. 197-65.000.

Lippens, Bernardus Cornelis: *See—*

Webb, Allen N.; and Lippens, Bernardus Cornelis, 3,759,990.

Lipschutz, Paul, to Societe d'Exploitation des Brevets NEIMAN. Protecting device for an access orifice to a tank. 3,759,075, Cl. 70-159.000.

Lisowski, Borys, to Ethicon, Inc. Suture package. 3,759,376, Cl. 206-63.300.

Littelfuse, Inc.: *See—*
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Little, Rollie H.: *See—*
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Liu, Frederick F.: *See—*
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Livingston, William L., to Factory Mutual Research Corporation. Fire protection system utilizing dry pipes normally maintained in a vacuum. 3,759,331, Cl. 169-17.000.

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Ford, Robert Brough; and Lloyd, Martin Herbert, 3,760,131.

Lobofina S.A.: *See—*
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Lockwood, Larry R., to Tektronix, Inc. Sampling device. 3,760,283, Cl. 328-151.000.

Loewe, Richard, to Bosch, Robert, Photokino G.m.b.H. Method and apparatus for electrooptical measurement of the distance from light-reflecting objects. 3,759,615, Cl. 356-4.000.

Loffler, Erwin, to Daimler-Benz Aktiengesellschaft. Axle suspension on especially rear axle suspension for motor vehicles. 3,759,542, Cl. 280-124.00a.

Logsdon, Hillard Glenn; and Werder, Ernest August, to Aeronca, Inc. Apparatus for determining fluid flow in a conduit. 3,759,098, Cl. 73-205.00r.

Lohbauer, Kenneth R.: *See—*
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Lohne, William E.; Montgomery, John R.; Carley, Jay L.; Darling, Richard; and Smith-Vaniz, William R., to American Cyanamid Company. Method and apparatus for automatically retrieving information from a succession of luminescent coded documents with means fr segregating documents. 3,760,161, Cl. 235-61.11e.

Loitzl, Rozica; and Schueler, Claus, to Brown Boveri & Company, Limited. Method for producing intermettallic connections. 3,759,691, Cl. 75-.5ba.

Lomasney, Henry Louis; and Lomasney, William Joseph. Weld thru primer. 3,759,756, Cl. 148-22.000.

Lomasney, William Joseph: *See—*
Lomasney, Henry Louis; and Lomasney, William Joseph, 3,759,756.

Long, Clive Beech Ansley: *See—*
Ollis, William John Bernard; Long, Clive Beech Ansley; and Levin, Ezra, 3,758,998.

Long, Robert Alvin; Over, William Roderick; Roberts, Lincoln Edwin; and Shoemaker, John Robert, to AMP Incorporated. Apparatus for securing wires to terminals in connectors. 3,758,935, Cl. 29-203.0mw.

L'Oreal: *See—*
Boudouris, Georges; Kalopissis, Gregoire; Levesque, Jean-Luc; and Roussopoulos, Paul, 3,760,148.

Lorenz, Allan C.: *See—*
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Lorenz, Joachim, to Ciba-Geigy Marienberg GmbH. Process for the production of epoxide polyadducts with phosphine oxide accelerators. 3,759,872, Cl. 260-47.0ec.

Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm. O-(N-Alkoxy-benzimodoyl)-(thiono) phosphoric(phosphonic) acid esters. 3,760,041, Cl. 260-944.000.

Lorenzi, Donald E.: *See—*
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Loro, Alberto: *See—*
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Loyer, Michael, to Personal Products Company. Combination tampon application and plunger. 3,759,258, Cl. 128-263.000.

Lubowitz, Hyman R.; Thorpe, Richard S.; and Vaughan, Robert W., to TRW Inc. Process for producing reinforced plastic laminates from polydiene block polymers. 3,759,777, Cl. 156-330.000.

Lubrizol Corporation, The: *See—*
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Lucas, Joseph, (Industries) Limited: *See—*
Cotton, Herbert John Thomas, 3,760,211.
Freeman, Frank George, 3,758,899.
Nevett, Leslie James, 3,760,135.

Luedke, Donald M.; and Tongas, Robert J. Fish scale. 3,759,337, Cl. 177-172.000.

Lukas, Paul. Safety catch for hydraulic jacks for automobiles. 3,759,488, Cl. 254-8.00r.

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Lund, Donald F.: *See—*
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Lunde, Reidar Skipperud: *See—*
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Lundmark, Lars-Erik; and Larsson, Evald, to AB Krima Maskinfabrik. Machine for converting wooden pieces into chips. 3,759,304, Cl. 144-180.000.

Lutz, Rober Clare; and Bernacchi, Jerald R., to Advanced Memory Systems. High speed sense amplifier. 3,760,194, Cl. 307-235.00r.

Lynn, Scott: *See—*
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M & T Chemicals, Inc.: *See—*
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MacDonald, Robert D., to Champoin Home Builders Company. Drawer. 3,759,600, Cl. 312-330.000.

Macmaster, Malcolm: *See—*
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MacNeil, Robert L.: *See—*
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Maddock, Edwin A. Lubricant dispensing means and system. 3,759,424, Cl. 222-309.000.

Maeda, Akitoshi: *See—*
Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyoichi; Maeda, Akitoshi; and Morinaca, Fumihiko, 3,759,911.

Maeda, Teruyuki. Vibration producing apparatus. 3,759,283, Cl. 137-106.000.

Maeda, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Induction type telemetering system. 3,760,408, Cl. 340-347.00p.

Magerle, Rudolf; and Datwyler, Fritz, to Cerberus AG. Electrical installation for protecting movable items. 3,760,402, Cl. 340-280.000.

Magill, Robert J.: *See—*
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Magnaflux Corporation: *See—*
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Maher, John P.: *See—*
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Mahr, Rene, to Societe Anonyme des Anciens Etablissements Paul Wurth. Charging device for a shaft furnace. 3,759,404, Cl. 214-37.000.

Makachev, Nikolai Ivanovich: *See—*
Selivanov, Anatoly Grigorievich; Makachev, Nikolai Ivanovich; and Parshina, Maria Kuzminichna, 3,759,299.

Makhlouf, Joseph M.: *See—*
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Maki, Eugen: *See—*
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Maksymiak, John; and Lewis, Richard B., to Xerox Corporation. Microfield donor with continuously reversing microfields. 3,759,222, Cl. 118-637.000.

Malangud, Jean Gaston, to Dupont, S. T. Gas outlet control device for a gas lighter. 3,759,655, Cl. 431-150.000.

Mallinson, Richard Frederick Niven: *See—*
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Mallory, P. R., & Co., Inc., mesne: *See—*
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Malmer, Albert E. Garment hangers. 3,758,974, Cl. 40-322.000.

Maltarp, Allan M., to Canadian Wire Brush Co. Brush mounting means. 3,758,908, Cl. 15-180.000.

Mangus, Ervin E.: *See—*
Dawson, Harry J.; Hoftiezer, Wallace A.; Keedy, David E.; Mangus, Ervin E.; Patton, Eugene K.; and Grandfield, Joseph P., 3,759,323.

Mangus, George, to Miami-Herald Publishing Company, The. Method for precision modification of preliminarily-etched photo-engraved color plates. 3,759,766, Cl. 156-14.000.

Mann, H. William: *See—*
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Mansmann, Manfred: *See—*
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Manzer, Marvin R., to Reed Industries, Inc. Coin collecting system. 3,759,577, Cl. 302-2.00r.

Maran Plastic Company: *See—*
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Maranci, Arutun, to American Cyanamid Company. Wet-spinning process for "dog-bone" shaped acrylonitrile polymer fibers. 3,760,053, Cl. 264-177.00f.

Marathon Oil Company: *See—*
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Marcec, Ervin A. Method of manufacturing refractory bottom rings. 3,758,942, Cl. 29-475.000.

Marcks, Frederick C. Currency converter. 3,760,165, Cl. 235-89.00r.
Marconi Company Limited, The: *See—*
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Marcoux, Leo, to Texas Instruments, Incorporated. Liquid level indicating system. 3,760,352, Cl. 340-59.000.
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Marks, Robert G. Containers for small articles such as pills. 3,759,371, Cl. 206-42.000.
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Marra, Frank: *See—*
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Martineau, Jean; and Biechler, Francois Joseph. Cleaning compositions. 3,759,847, Cl. 252-544.000.
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Masetti, William R., to United Nuclear Corporation. Nuclear fuel element. 3,759,243, Cl. 126-68.000.
Mason, Lawrence J., to Xerox Corporation. Multiple flash lamp alphanumeric projection disc assembly. 3,759,149, Cl. 95-45.000.
Mason, Robert Jean; and Landry, Norman Richard, to RCA Corporation. Dielectrically loaded waveguide assembly. 3,760,305, Cl. 333-95.00r.
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Massagli, Daniel; and Massagli, Marino Ralph, to Tru-Lok Metal Fabricating Company, Inc. Machine for producing sandwiched plastic foam sheet metal panels. 3,759,646, Cl. 425-110.000.
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Masunaga, Kunihiko; and Shinohara, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Surface coating method by electrolytic polymerization. 3,759,797, Cl. 204-14.00n.
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Matejka, Edgar, to Bodenseewerk Geratetechnik GmbH. Circuit arrangement for taking the mean of several input voltages. 3,760,284, Cl. 328-158.000.
Matheney, Richard H. Beverage mixing and dispensing apparatus. 3,759,422, Cl. 222-129.400.
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Matsch, Ladislas C., to Union Carbide Corporation. Liquid-gas contact tray. 3,759,498, Cl. 261-114.0jp.
Matsudo, Kazuo; and Shimomura, Takayoshi, to Nippon Koken Kabushiki Kaisha. Method of manufacturing steel plates for extra deep drawing. 3,759,081, Cl. 72-364.000.
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Mattia, Francis Joseph; and Sakler, Stephen Allen, to M & T Chemicals, Inc. Process for producing ferrous sulfate. 3,760,069, Cl. 423-558.000.
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Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., to Union Carbide Corporation. Lactam polymerization with amide initiators. 3,759,876, Cl. 260-78.001.
Maude, Stanley Morgan, to Anderton Springs Limited. Circlip. 3,758,923, Cl. 24-256.000.
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Maytag, John Hardy, to Coors Container Company. Air spring cylinder assemblies. 3,759,142, Cl. 91-396.000.
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McClelland, Roland Hill, Jr., to Illinois Tool Works Inc. Ceramic capacitor and method of forming same. 3,760,244, Cl. 317-258.000.
McClung, Charles E.; and Glasgow, David Gerald, to Monsanto Research Corporation. Polyurethane structural adhesive. 3,759,778, Cl. 156-331.000.
McCombie, Frederick Walter, to Megator Pumps and Compressors Limited. Removal of surface layers from liquids. 3,759,390, Cl. 210-242.000.
McCray, Richard N., to Pemco Corporation. Cable and switch apparatus and method for preventing damage to trailing cable power system. 3,760,134, Cl. 200-52.00r.
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Espana, Salvador; and Funt, Brunson Bert, 3,760,141.

McCullough, Robert E.; and Hougendobler, Cleon W., to HMW Industries, Inc. Modular solid state wristwatch. 3,759,031, Cl. 258-50.00r.

McCune, Clarence G.; Vincer, John C.; and Graves, Kenneth E., to California Computer Products, Inc. Card punch system and process. 3,759,442, Cl. 234-1.000.

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McFaul, Howard J.; Erdman, Donald C.; and Friedmann, Evan B., 3,759,090.

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McFadden, Allan L.: *See—*
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McFaul, Howard J.; Erdman, Donald C.; and Friedmann, Evan B., 1/2 each to McDonnell Douglas Corporation and Erdman, Donald C. Ultrasonic extensometer. 3,759,090, Cl. 73-67.600.

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McGregor, Rob Roy. Flowmeter. 3,759,099, Cl. 73-207.000.

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McGuire, Thomas Michael, to Du Pont de Nemours, E. I., and Company. Water insoluble anthraquinone dyes for cellulosic and synthetic fibers. 3,759,963, Cl. 260-377.000.

McIntosh, Harold A.; and Yeaman, George A., to Robertshaw Controls Company. Adjustable actuating level current sensing relay. 3,760,309, Cl. 335-1.000.

McIntyre, Donald E., to Ambassador International, Inc. Credit card carrying case. 3,759,305, Cl. 150-39.000.

McKean, Larry D. Stadium seat or similar article. 3,759,570, Cl. 297-236.000.

McKeown, Robert R.: *See—*
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McKethan, Eddie B. Convertible articulated vehicle. 3,759,545, Cl. 280-423.00r.

McLarnon, Robert Porter. Lock. 3,759,072, Cl. 70-59.000.

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McRay, Ferris B., to Allis-Chalmers Manufacturing Company. Fluid control system for earthworking apparatus including automatic pressure regulating means. 3,759,143, Cl. 91-414.000.

McVeigh, William B.: *See—*
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Medcor, Inc.: *See—*
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Megator Pumps and Compressors Limited: *See—*
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Mehalchick, Emil J., to GTE Sylvania Incorporated. Process for producing rare earth oxide phosphors. 3,759,835, Cl. 252-301.40r.

Meiberg, Abner. Dough treating machine. 3,759,167, Cl. 99-485.000.

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Mennenga, Hermann, to Balzers Patent- und Beteiligungs-Aktiengesellschaft. Ionization pressure gauge tube. 3,760,212, Cl. 313-7.000.

Mercadie, Claude; and Taussac, Pierre, to Societe Anonyme dite: Systemes et Procedes Industriels Modernes. Sorting apparatus. 3,759,381, Cl. 209-73.000.

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Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. N-(Nonachlorobiphenyl)aminopropyl-N'-dimethylamine. 3,759,995, Cl. 260-570.50p.

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Miami-Herald Publishing Company, The: *See—*
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Mihelich, Walter G., to Price Company Limited, The. High strength newsprint. 3,759,785, Cl. 162-142.000.

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Miller, Cecil V. Fishing tackle box. 3,758,977, Cl. 43-57.50r.

Miller, Gary L., to Magnavox Company, The. One piece character display device. 3,758,973, Cl. 40-130.00e.

Miller, Jack V., to Sunbeam Lighting. Variable density diffuser for lighting fixtures. 3,760,178, Cl. 240-106.00r.

Miller, Lawrence J., to Caterpillar Tractor Company. Multi-elevator scraper. 3,758,966, Cl. 37-8.000.
Miller, Richard K. Game device. 3,759,516, Cl. 273-1.00r.
Miller, William A.; and Weiler, Henry R., Jr., to Carborundum Company, The. High-chrome fused cast refractories. 3,759,728, Cl. 106-59.000.
Millipore Corporation: *See—*
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Mills, Francis Duncan, to Baker Equipment Engineering Co., Inc. Manual override apparatus for electrohydraulic valve control station. 3,759,485, Cl. 251-130.000.
Mills, Ivor W.; and Dimeler, Glenn R., to Sun Oil Company of Pennsylvania. Blend comprising hydrorefined oil and unhydrorefined oil. 3,759,817, Cl. 208-14.000.
Mills, Reginald Richard: *See—*
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Misencik, John J.; and Nystrom, Charles E.; deceased (Nystrom, Mae; administratrix), to Westinghouse Electric Corporation. Circuit breaker system. 3,760,308, Cl. 335-35.000.
Misumi, Teruyuki; Miyauchi, Hirotsugu; Tsushima, Sakae; Takeda, Kunihiko; and Miyaji, Toshio, to Asahi Kasei Kogyo Kabushiki Kaisha. Graft polymeric substrate. 3,759,738, Cl. 117-93.310.
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Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.
Monaghan, James. Vehicle safety device. 3,759,343, Cl. 180-91.000.
Moneagle, Otto F.; and Svatek, Karl, to International Business Machines Corporation. Ribbon feed and correction device for a high speed printer. 3,759,456, Cl. 242-57.100.
Moneymaker, John R.: *See—*
Buddemeyer, Bruce D.; and Moneymaker, John R., 3,759,717.
Monier, Paulin, to Thone-Poulenc S.A. Oxidation of o-toluenesulfonamides by molecular oxygen. 3,759,936, Cl. 260-301.000.
Monitor Cabinents; a division of Comerico, Inc.: *See—*
Freeman, Dixon L., 3,759,191.
Monsanto Company: *See—*
Corey, Albert E.; and Donermeyer, Donald D., 3,759,858.
Sullivan, James D., 3,759,829.
Monsanto Research Corporation: *See—*
McClung, Charles E.; and Glasgow, David Gerald, 3,759,778.
Montagna, Angelo A.: *See—*
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,759,825.
Montefiore, Herbert Ralph; deceased (by the National Westminster Bank, Limited). Keyed joint. 3,759,065, Cl. 64-23.000.
Montgomery, John R.: *See—*
Lohne, William E.; Montgomery, John R.; Carley, Jay L.; Darling, Richard; and Smith-Vaniz, William R., 3,760,161.
Monti, Giancarlo, to Societa Italiana Telecomunicazioni Siemens S.p.A. PCM telecommunication system with TDMA voice transmission. 3,760,106, Cl. 179-15.0ba.
Moore, Cecil L.; and McCarthy, Roger L., to McDonald, A. Y., Mfg. Co. Valve fitting for bottles. 3,759,291, Cl. 137-588.000.
Moore, John J.: *See—*
Sax, Sylvan M.; Moore, John J.; and Bridgwater, Anna B., 3,759,794.
Moore, John Russell Crompton. Resilient mounting arrangement. 3,759,503, Cl. 267-58.000.
Moore, Robert E., to Sun Oil Company of Pennsylvania. Bis-(dialkyla damantyl)benzenes. 3,760,020, Cl. 260-668.00f.
Moorehead, Thomas J., to GTE Automatic Electric Laboratories Incorporated. Lockout selection circuit. 3,760,120, Cl. 179-19.000.
Morgan, Kenneth A., to Universal Oil Products Company. Solvent extraction of germanium from alum solution. 3,760,060, Cl. 423-89.000.
Morgan Refractories, Limited: *See—*
Steen, William John, 3,759,725.
Mori, Hiroshi; Wakasa, Yutaka; and Uchiike, Hisayuki, to Yokogawa Electric Works, Ltd. Circuitry for transmitting pulses with ground isolation but without pulse waveform distortion. 3,760,198, Cl. 307-268.000.
Mori, Kazuo: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.
Mori, Takaaki; Higuchi, Hisayuki; and Uehara, Keijiro, to Hitachi, Ltd. Washed emitter method for improving passivation of a transister. 3,759,761, Cl. 148-187.000.
Morimoto, Masanobu: *See—*
Sato, Koichi; Nikl, Akira; Kitamura, Hiroshi; and Morimoto, Masanobu, 3,760,031.
Morinaca, Fumihiko: *See—*
Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyoichi; Maeda, Akitoshi; and Morinaca, Fumihiko, 3,759,911.
Morita, Toshihito: *See—*
Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.
Morrell, Ronald Joseph: *See—*
Thompson, Joseph; Hemming, Raymond Charles; Critchley, John Edward; and Morrell, Ronald Joseph, 3,760,104.
Morris, Francis Edwin. Coupler for trailer hitch or the like. 3,759,549, Cl. 280-512.000.
Morton, Paul Daniel; and Buchholz, Bernard, to Pennwalt Corporation. Polymeric tin mercaptides. 3,759,966, Cl. 260-429.700.
Morton, Robert D., to Hartford Special Machinery Company, The. Combination point former and thread roller machine. 3,758,900, Cl. 10-4.000.
Morton, William Desmond: *See—*
Duerdoth, Winston Theodore; Hughes, Charles Joseph; Hesketh, John Frederick; and Morton, William Desmond, 3,760,107.
Morton, William Desmond; and Jones, William George Tilston, to Postmaster General, Her Majesty's. Fault discrimination circuit. 3,760,114, Cl. 179-18.0eb.
Motorola, Inc.: *See—*
Barone, Frank J.; and Tolliver, Donald L., 3,759,762.
Bruckert, Eugene J., 3,760,355.
Hoffman, Charles R.; and Laitin, William W., 3,760,380.
Wang, Raymond C., 3,759,763.
Yester, Francis R., Jr., 3,760,204.
Moulds, Gordon M., to Du Pont de Nemours, E. I., and Company. Process for preparing porous aromatic polyamide fibers. 3,760,054, Cl. 264-210.00f.
Mravic, Brian; and Porter, Lew F., to United States of America, Navy. High-toughness alloy steel with improved weldability. 3,759,706, Cl. 75-124.000.

Mruz, John M. Foot impellent toy. 3,759,518, Cl. 273-106.00b.

MTD Products Inc.: *See—*
Plamper, Gunter F., 3,759,342.

Mueller, Herbert: *See—*
Klotmann, Georg; and Mueller, Herbert, 3,759,929.

Mueller, Max B.; Salatiello, Peter P.; and Kaufman, Herman S., to Allied Chemical Corporation. Cold flow resistant homogeneous copolymers of tetrafluoroethylene and chlorotrifluoroethylene and process for preparing them. 3,759,883, Cl. 260-37.50a.

Mueller, Werner: *See—*
Jutz, Christian; and Mueller, Werner, 3,759,976.

Muhlhausen, Cornelius: *See—*
Salamon, Manfred; Hagebaum, Hans-Jurgen; Wandel, Martin; Muhlhausen, Cornelius; Bau, Werner; and Reinecke, Gerd-Konrad, 3,759,742.

Muize, Heinz; Barth, Gerhard; and Pfuller, Kurt, to VEB Wirkmaschinenbau Karl-Marx-Stadt. Full-fashioned knot fabric and method and apparatus for the production thereof. 3,759,070, Cl. 66-189.000.

Muller, Alfred, to Siemens Aktienegesellschaft. Superconductive alloy and method for its production. 3,759,750, Cl. 148-2.000.

Muller, Jean-Nicolas: *See—*
Fischer, Artur; and Muller, Jean-Nicolas, 3,759,257.

Muller, Peter, to Cerberus AG. Optical smoke detector. 3,760,395, Cl. 340-237.00s.

Multifastener Corporation: *See—*
Willson, Elmer E.; and Pouch, Thomas M., 3,759,418.

Munchbach, Curt, to Ungerer, Irma. Gear for driving flying shears. 3,759,117, Cl. 74-681.000.

Murakami, Heiichiro: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,759,849.

Murakami, Hiroshi, to Nippon Electric Company, Limited. Cylindrical domain associative memory apparatus. 3,760,390, Cl. 340-174.0ga.

Murakami, Masayuki: *See—*
Ishii, Atsushi; Murakami, Masayuki; Hagiwara, Yoichi; Ono, Tomio; Adachi, Kiyoshi; and Hashimoto, Shuji, 3,760,405.

Murphy Chemical Company Limited, The: *See—*
Pianka, Max, 3,759,972.

Murphy, John H., to Southwire Company. High capacity continuous casting method. 3,759,314, Cl. 164-87.000.

Murray, Thomas P., to United States Steel Corporation. Apparatus for determining correct pyrometer readings with steam interference present. 3,759,102, Cl. 73-355.00r.

Mursic, Marjan: *See—*
Kretschmer, Ingo; and Mursic, Marjan, 3,760,140.

Muschelknautz, Edgar; and Krambrock, Wolfgang, to Bayer Aktiengesellschaft. Apparatus for conveying bulk material. 3,759,578, Cl. 302-29.000.

Myers, Harold C.: *See—*
Brennan, James A.; Garwood, William E.; and Myers, Harold C., 3,759,821.

Nabisco, Inc.: *See—*
Griner, Arthur J.; and Blain, William A., 3,759,650.

Nadi, Salem A., to Foxboro Company, The. Process control system. 3,760,374, Cl. 340-172.500.

Nagae, Tadashi; Tsuji, Nobuo; and Miyazako, Takushi, to Fuji Photo Film Co., Ltd. Process for improving color developability of reversal photographic films. 3,759,710, Cl. 96-22.000.

Nagaeda, Hiroshi: *See—*
Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, 3,759,758.

Nagano, Kentaro; and Saoyama, Yoshihito, to Asahi Glass Co., Ltd. Steel wire for reinforcing glass and method or production. 3,759,754, Cl. 148-6.160.

Nagata, Yasunori: *See—*
Ishizawa, Kazutomo; Nagata, Yasunori; and Uematsu, Yoshiaki, 3,758,968.

Nakada, Akira, to Nippon Gakki Seigo Kabushiki Kaisha. Automatic rhythm playing apparatus. 3,760,088, Cl. 84-1.030.

Nakagawa, Akito; Ueda, Jenji; Tanigawa, Hironari; and Ishigoro, Keiichiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Electrolytic apparatus for producing hydrated iron oxide. 3,759,814, Cl. 204-275.000.

Nakajo, Toshihiko: *See—*
Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, 3,760,364.

Nakamori, Yukio: *See—*
Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.

Nakanishi, Susumu, to Pfizer, Inc. Synthesis of -(carbo(5-indanyloxy)) benzylpencillin. 3,759,898, Cl. 260-239.100.

Nakano, Nobukuni: *See—*
Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.

Nakaoji, Kunio: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,759,849.

Nakata, Kiyohiro, to Numata, Yehan. Micrometer comprising a digital counter. 3,758,956, Cl. 33-166.000.

Nakayama, Kiyoshi; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing L-phenylalanine. 3,759,790, Cl. 195-29.000.

Napolitano, John P. Dealkylation of N-alkyl aromatic amines. 3,759,997, Cl. 260-578.000.

Nappi, John J. Disposable swab-type applicator package. 3,759,375, Cl. 206-63.20r.

Narayanan, Venkatachala L.: *See—*
Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., 3,759,903.

Narbaits-Jaureguy, Jean Raymond; and Billottet, Henri, to Thomson-CSF. Limited range radiocommunication system. 3,760,278, Cl. 325-51.000.

Narkie, Walter E. Ladder jack. 3,759,474, Cl. 248-238.000.

Naru, Robert B.: *See—*
Hundey, Doran J.; and Naru, Robert B., 3,759,624.

Narusawa, Izumi: *See—*
Fujii, Mitsuru; and Narusawa, Izumi, 3,759,194.

Nash Bros. Co.: *See—*
Purple, Edward B., 3,759,351.

Nasser, Gamal El Din; and Waldmann, Hans, to Linde Aktiengesellschaft. Heat exchanger. 3,759,322, Cl. 165-166.000.

Nastasic, Vladimir, to Interconsult S.p.A. Monomooring sea platform. 3,759,045, Cl. 61-46.000.

Nasuta, Anthony T., Jr.: *See—*
Boenning, Robert A.; and Nasuta, Anthony T., Jr., 3,760,174.

National Distillers and Chemical Corporation: *See—*
Platz, Gerald M.; and Greenberg, Daniel H., 3,759,811.

National Research Development Corporation: *See—*
Attenborough, Christopher George, 3,759,302.
Flack, Frederick Colin; and James, Evan Douglas, 3,759,246.
Rogers, Gordon Leonard; and Stephens, Noel William Frank, 3,759,618.

National Westminster Bank, Limited: *See—*
Montefiore, Herbert Ralph, 3,759,065.

Neargarder, Robert F.: *See—*
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargarder, Robert F., 3,759,586.

Neary, Padraic E.: *See—*
Petersen, Svend A. H.; and Neary, Padraic E., 3,759,338.

Neely, Willis A. Sealing means for rotating shaft. 3,759,533, Cl. 277-130.000.

Neilford Leasing, Inc.: *See—*
Konet, Henry, 3,759,244.

Neissel, John P., to General Electric Company. Neutron detector system. 3,760,183, Cl. 250-83.100.

Nelboeck-Hochstetter, Michael: *See—*
Bergmeyer, Hans Ulrich; Beaucamp, Klaus; Jaworek, Dieter; and Nelboeck-Hochstetter, Michael, 3,759,596.

Nelenius, Erik: *See—*
Lindstrom, Bengt; Citron, Bengt; Nelenius, Erik; Karlsson, Ingemar; and Rosby, Sven-Olof, 3,759,434.

Nelson, David A.: *See—*
Gum, Wilson F., Jr.; and Nelson, David A., 3,760,013.

Nerozzi, Nerio, to AMMI S.p.A. Plant for the treatment and the oxidation of antimony minerals. 3,759,500, Cl. 266-9.000.

Neuder, Rudolph Otto: *See—*
Rachlin, Joel R.; and Neuder, Rudolph Otto, 3,759,159.

Neuklis, Winifred A.: *See—*
Creger, Paul E.; and Neuklis, Winifred A., 3,759,986.

Nevett, Leslie James, to Lucas, Joseph, (Industries) Limited. Seat-belt safety switch with overcenter snap acting contact engaging belt actuating means. 3,760,135, Cl. 200-61.58b.

New Nippon Electric Company, Ltd.: *See—*
Yoshikawa, Sadayoshi; and Arita, Mitsuo, 3,760,221.

Newcum, William W.: *See—*
Czarnecki, Stephen J.; Evers, Harry G.; Kellogg, Frank; Newcum, William W.; Vogel, Richard F.; and Woodward, John W., 3,760,117.

Newell Industries Inc.: *See—*
Falk, Mervin L.; and Denk, Joseph P., 3,759,462.

Newman, Irvin; and Strengholt, Roy, to Thermoseal Glass Corporation. Electrically heated window with a connector block and a circuit breaker. 3,760,157, Cl. 219-522.000.

Newman, Jerome S.: *See—*
Ardito, Gerald J.; Newman, Jerome S.; and Sarris, Samuel E., 3,759,429.

Niagara Machine & Tool Works: *See—*
Jones, Clarence O., Jr., 3,760,189.

Nibby, Chester M., Jr.; Manton, John C.; Curley, John L.; and Franklin, Benjamin S., to Honeywell Information Systems Inc. Apparatus and method for memory refreshment control. 3,760,379, Cl. 340-173.00r.

Nicely, Thomas E.: *See—*
Bengel, Thomas G.; and Nicely, Thomas E., 3,759,662.

Nicholas Equipment Co.: *See—*
Kirtz, Douglas H., 3,758,993.

Nickel, Ronald W. Packing door for refuse truck. 3,759,406, Cl. 214-83.300.

Nicks, Peter Francis, to Imperial Chemical Industries Limited. Coating compositions. 3,759,864, Cl. 260-33.6ep.

Nicolson, Alexander M., to Sperry Rand Corporation. Base band vehicle safety apparatus. 3,760,414, Cl. 343-6.50r.

Nidola, Antonio E.: *See—*
Bianchi, Giuseppe; and Nidola, Antonio E., 3,759,842.

Nighman, William, to Reynolds Metals Company. Method of and apparatus for cooling continuously cast metal. 3,759,309, Cl. 164-4.000.

Nikl, Akira: *See—*
Sato, Koichi; Nikl, Akira; Kitamura, Hiroshi; and Morimoto, Masanobu, 3,760,031.

Nilsson, Nils Edvin Folke; and Eurenius, Jimmie Arne, to STAL Refrigeration AB. Tube ice generator. 3,759,061, Cl. 62-352.000.

Nimylowycz, Csyp, to United States of America, Army. Parachute arrangement. 3,759,469, Cl. 244-149.000.

Nippon Electric Co., Ltd.: *See—*
Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, 3,760,364.

Nippon Electric Company, Limited: *See—*
Kogo, Masanori; and Honda, Hisashi, 3,760,322.
Murakami, Hiroshi, 3,760,390.
Sawai, Akira, 3,760,111.

Nippon Gakki Seigo Kabushiki Kaisha: *See—*
Nakada, Akira, 3,760,088.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Isii, Sigeki; and Uchiyama, Yasuji, 3,760,358.

Nippon Koken Kabushiki Kaisha: *See—*
Matsudo, Kazuo; and Shimomura, Takayoshi, 3,759,081.

Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi, 3,759,534.

Nippon Steel Corporation: *See—*
Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.
Koga, Ikumi; Kobayashi, Akira; and Ikeda, Tsuneo, 3,759,694.

Nippon Telegraph & Telephone Public Corporation: *See—*
Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, 3,760,364.

Nippondenso Co., Ltd.: *See—*
Endo, Kunio, 3,759,231.
Ohta, Jun; Okamoto, Atsutoshi; and Sugiura, Akio, 3,759,582.

Nippondenso Kabushiki Kaisha: *See—*
Ito, Isau, 3,759,555.

Nishi, Sunao; Ikeda, Shojiro; and Torii, Takayoshi, to Shinto Kogyo Kabushiki Kaisha. Exothermic composition for hot tops. 3,759,724, Cl. 106-38.220.

Nishida, Reijiro: *See—*
Kunii, Kazuo; Nishida, Reijiro; Tanimura, Thoru; Kitamura, Masaji; and Okamoto, Shinya, 3,759,693.

Nishimura, Kazuyoshi, 1/2 to Onitsuka Co., Ltd. Sports shoe. 3,758,964, Cl. 36-2.5al.

Nishioka, Matsuo: *See—*
Oka, Shunzo; and Nishioka, Matsuo, 3,760,320.

Nishizawa, Jun-Ichi; and Takahashi, Kaoru, to Semiconductor Research Foundation. Optical flip-flop element. 3,760,201, Cl. 307-312.000.

Nissan Motor Company: *See—*
Kogo, Hiroshi; and Tanabe, Kuniyuki, 3,760,109.

Nissim, Samuel, to Electronic Arrays Inc. Telephone dialer with arithmetic calculation capability and visual display of digits. 3,760,121, Cl. 179-90.00k.

Nitz, Rolf-Eberhard: *See—*
Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,759,907.

Nobell, Albert. Method for manufacture of urea-formaldehyde fertilizer. 3,759,687, Cl. 71-28.000.

Noddings, John: *See—*
Blee, Timothy John; Hyde, Lawrence Edward; and Noddings, John, 3,759,344.

Nohara, Naohiro: *See—*
Kawana, Masashi; Saegusa, Makoto; Ohsugi, Kenzo; and Nohara, Naohiro, 3,759,701.

Nola, Frank J.; Currie, James R.; and Reid, Harry, Jr., to United States of America, National Aeronautics and Space Administration. Induction motor control system with voltage controlled oscillator circuit. 3,760,248, Cl. 318-230.000.

Nolan, John L.; and Etes, Donald E., to Hollister Incorporated. Post-surgical drainage collection pouch. 3,759,260, Cl. 128-283.000.

Nolte, Robert K., to Metalwash Machinery Corporation. Drawer type pan washing machine. 3,759,276, Cl. 134-57.0dl.

Noma-World Wide Inc.: *See—*
Ocasio, Gerardo; and Tuman, Edwin, 3,760,266.

Nomiyama, Zenjiro: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,759,849.

Nomoto, Yoshihisa; Oguino, Masanori; Ueda, Seiichi; and Kitamura, Sadao, to Hitachi, Ltd. Noise suppression circuit. 3,760,196, Cl. 307-237.000.

Nordberg, Svein T.: *See—*
Reynolds, Robert S.; and Nordberg, Svein T., 3,760,360.

Norsk Hydro a.s.: *See—*
Blaker, Ivar; Boyum, Oystein; Andreassen, Knut Anton; Lunde, Reidar Skipperud; and Tveten, Kjell Wallin, 3,760,050.

Norsk Hydro-Electrisk Kvaelstofaktieselskab: *See—*
Falkum, Einar; and Brunborg, Ivar, 3,759,696.

North American Philips Corporation: *See—*
Perazzella, Frank W., 3,759,067.

North, Irving W.; and Bankstahl, Herbert A., to Brunswick Corporation. Exhaust water separator for marine engines. 3,759,041, Cl. 60-310.000.

North, James R., Sr.: *See—*
Schaefer, Donald D.; and North, James R., Sr., 3,759,636.

Northern Electric Company Limited: *See—*
Thompson, Joseph; Hemming, Raymond Charles; Critchley, John Edward; and Morrell, Ronald Joseph, 3,760,104.

Northrop Carolina, Inc.: *See—*
Sanders, Victor M.; and Scotchie, Andrew A., 3,759,216.

Nosce Plastics, Incorporated: *See—*
Cloyd, Harold S., 3,759,415.

Nose, Shinji; Tsujimura, Hideaki; Iio, Katumi; Ishihara, Hitoshi; and Yoshimoto, Hiroshi, to Osaka Soda Co., Ltd. Process for the preparation of chlorinated polyethylene, and compositions thereof. 3,759,888, Cl. 260-94.90h.

Nowak, Bernard E.: *See—*
Economy, James; and Nowak, Bernard E., 3,759,870.

Nowak, Edmund, to Zaklad Doswiadczalny Pras Automatycznych HYDOMAT przy Zakladach Mechanicznych "Tarnow". Punching and forming tool with straightening facility for metal strip. 3,759,079, Cl. 72-330.000.

Nowak, Herbert: *See—*
Schorre, Gustav; Nowak, Herbert; and Saiko, Otto, 3,759,930.

NSM Apparatebau GmbH: *See—*
Kortenhaus, Dieter, 3,760,367.

Nudenberg, Walter; and Delaney, Edward A., to Uniroyal, Inc. Process for preparing random high cis-SBR. 3,759,882, Cl. 260-84.100.

Numata, Yehan: *See—*
Nakata, Kiyohiro, 3,758,956.

Nupp, Donald L.; and Hilmanowski, James R., to Whirlpool Corporation. Vacuum cleaner with movable handle structure. 3,758,914, Cl. 15-329.000.

Nurina, Shogo; Hayashi, Yoshihiro; and Yamada, Kyohei, to Sanyo Chemical Industries, Ltd. Method for preparing salts of sulfoalkyl esters. 3,759,985, Cl. 260-486.00r.

Nutting, William: *See—*
Lemelson, Jerome H.; and Nutting, William, 3,758,982.

N.V. Bronswerk Apparatenbouw-v/h Moring & Steenaart: *See—*
Van Diepenbroek, Alfred Erich Wibrandt, 3,759,317.

N.V. Internationale Octrooi Maatschappy "Octropa": *See—*
Holscher, Ebo Jan; and Osinga, Theo Jan, 3,759,843.

N.V. Werkspoor-Amsterdam: *See—*
DeVos, Ferdinand Allard; and Steege, Jan Hendrik Terter, 3,760,098.

Nystrom, Charles E.: *See—*
Misencik, John J.; and Nystrom, Charles E., 3,760,308.

Nystrom, Mae: *See—*
Misencik, John J.; and Nystrom, Charles E., 3,760,308.

Ocasio, Gerardo; and Tuman, Edwin, to Noma-World Wide Inc. Circuit tester for Christmas tree light sets. 3,760,266, Cl. 324-51.000.

O'Connell, Richard P.; Kingsley, William; and Zucker, Edwin, to Xerox Corporation. Microimage ransom access and retrieval printer. 3,759,611, Cl. 355-43.000.

O'Connor, Donald T.; Rosauer, Peter J.; and Lorenzi, Donald E., to Magnaflux Corporation. Flaw detector for square billets using magnetic tape helically moved about said billets. 3,760,263, Cl. 324-37.000.

O'Connor, Ward F., to Lummus Company, The. Control device. 3,759,296, Cl. 137-805.000.

Oda Gosen Kogyo Kabushiki Kaisha: *See—*
Takai, Isao; and Ogura, Junshiro, 3,759,025.

O'Dell Manufacturing Inc.: *See—*
Hall, Frank Kenneth, 3,759,224.

Oehler, Carl W., to Oehler Steel Company, mesne. Load pallet construction. 3,759,192, Cl. 108-44.000.

Oehler Steel Company, mesne: *See—*
Oehler, Carl W., 3,759,192.

O'Gara, George W.: *See—*
Walkley, James A.; Piotroski, Peter N.; and O'Gara, George W., 3,759,382.

Ogasahara, Fumio: *See—*
Shioda, Shigeru; Ogasahara, Fumio; and Otomo, Minoru, 3,759,042.

Ogasawara, Masao: *See—*
Fujii, Chiyuki; Hirata, Michimasa; and Ogasawara, Masao, 3,759,984.

Oguino, Masanori: *See—*
Nomoto, Yoshihisa; Oguino, Masanori; Ueda, Seiichi; and Kitamura, Sadao, 3,760,196.

Ogura Hoseki Seiki Kogyo Kabushiki Kaisha: *See—*
Takai, Isao; and Ogura, Junshiro, 3,759,025.

Ogura, Junshiro: *See—*
Takai, Isao; and Ogura, Junshiro, 3,759,025.

Oguri, Tomiji: *See—*
Sugahara, Norio; and Oguri, Tomiji, 3,759,080.

Ohnishi, Hiroshi, to Tokyo Shibaura Electric Co. Dual compartment-temperature refrigerator with positive internal air circulation. 3,759,051, Cl. 62-180.000.

Ohsawa, Takashi; and Karita, Michiaki. Automatic telecasting or radio broadcasting monitoring system. 3,760,275, Cl. 325-31.000.

Ohsugi, Kenzo: *See—*
Kawana, Masashi; Saegusa, Makoto; Ohsugi, Kenzo; and Nohara, Naohiro, 3,759,701.

Ohta, Jun; Okamoto, Atsutoshi; and Sugiura, Akio, to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha. Fault detecting system for vehicle anti-skid control system. 3,759,582, Cl. 303-21.0af.

Oida, Kyuya: *See—*
Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, 3,759,758.

Ojima, Sueo: *See—*
Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, 3,759,758.

Oka, Shunzo; and Nishioka, Matsuo, to Matsushita Electric Industrial Co., Ltd. Device for simultaneously controlling a plurality of variable resistors. 3,760,320, Cl. 338-128.000.

Okamoto, Atsutoshi: *See—*
Ohta, Jun; Okamoto, Atsutoshi; and Sugiura, Akio, 3,759,582.

Okamoto, Katsuyuki: *See—*
Shino, Goro; Okamoto, Katsuyuki; and Shimura, Katsumi, 3,759,237.

Okamoto, Shinya: *See—*
Kunii, Kazuo; Nishida, Reijiro; Tanimura, Thoru; Kitamura, Masaji; and Okamoto, Shinya, 3,759,693.

Okamoto, Tadashi: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.

Okamoto, Toshio: *See—*
Fukuma, Norboro; Chayamichi, Hiroshi; Okamoto, Toshio; and Henmi, Hiroshi, 3,760,052.

Okamura, Kyuya: *See—*
Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyoichi; Maeda, Akitoshi; and Morinaca, Fumihiko, 3,759,911.

Oki Electric Industry Co., Ltd.: *See—*
Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, 3,760,364.

Olagnier, Jean: *See—*
Greiner, Henri; Masson, Yves; and Olagnier, Jean, 3,759,306.

Olin Corporation: *See—*
Doerr, Richard L.; and Fuzesi, Stephen, 3,759,664.
Gavin, David F.; and Raymond, Maurice A., 3,759,932.
Pitts, James J.; and Babiec, John S., Jr., 3,759,916.

Oliver, Robert K.; and Ford, George L., to Union Oil Company of California. Calciner-preheater. 3,759,795, Cl. 201-25.000.

Ollis, William John Bernard; Long, Clive Beech Ansley; and Levin, Ezra, to Timber Research and Development Association. Multi storey building. 3,758,998, Cl. 52-79.000.

Olson, H. G., & Co.: *See—*
Olson, Harold G., 3,758,992.

Olson, Harold G., to Olson, H. G., & Co. Sealed closures with weather-stripping. 3,758,992, Cl. 49-489.000.

Olson, Hjalmar A., to General Electric Company. Vehicle chassis. 3,759,540, Cl. 280-106.00r.

Olympia Werke AG: *See—*
Koch, Paul, 3,759,362.
Rix, Albert; Werner, Georg; and Euchs, Hans, 3,759,360.

O'Malley, Joseph E. Splint for immobilization of the mandible. 3,759,256, Cl. 128-89.00a.

Omori, Kazuo; Hara, Yoshiaki; and Iguchi, Masaaki, to Fuji Iron & Steel Co., Ltd. Method of blowing reducing gas into a blast furnace. 3,759,698, Cl. 75-42.000.

Omran, Jaafar; Franck, Heinz-Gerhard; and Zander, Maxmillian, to Rutgerswerke Aktiengesellschaft. Process for the production of pressure resistant highly heat resistant foam plastics made from mixtures of a bituminous mass and a novolak. 3,759,848, Cl. 2602.50f.

Onitsuka Co., Ltd.: *See—*
Nishimura, Kazuyoshi, 3,758,964.

Onkyo Kabushiki Kaisha: *See—*
Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, 3,760,235.

Ono, Tomio: *See—*
Ishii, Atsushi; Murakami, Masayuki; Hagiwara, Yoichi; Ono, Tomio; Adachi, Kiyoshi; and Hashimoto, Shuji, 3,760,405.

Onsager, Olav T., to Halcon International, Inc. Coupling of organic compounds. 3,759,983, Cl. 260-485.00r.

Oohara, Kunio: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,759,849.

Oreno, Friedrich. Roller threaded spindle with nut. 3,759,113, Cl. 74-424.800.

Origgi, Robert O.: *See—*
Becca, Guiseppe; and Origgi, Robert O., 3,759,753.

Orlando, Harold J.: *See—*
Daly, Patrick J.; Grogg, William E.; Layman, Stuart F.; Orlando, Harold J.; Perry, James E.; and Van Derlaske, Dennis P., 3,760,181.

Oronzio de Nora Impianti Elettrochimici S.p.A.: *See—*
Bianchi, Giuseppe; and Nidola, Antonio E., 3,759,842.

Osaka Soda Co., Ltd.: *See—*
Nose, Shinji; Tsujimura, Hideaki; Iio, Katumi; Ishihara, Hitoshi; and Yoshimoto, Hiroshi, 3,759,888.

Osawa, Yoshio; and Ueno, Koitiro, to Teikoku Hormone Mfg. Co., Ltd. 1-Aryloxy-4,5-diphenylimidazoles. 3,759,946, Cl. 260-309.000.

Osborn, Claiborn Lee; and Trecker, David John, to Union Carbide Corporation. Photopolymerization process using combinations of organic carbonyls and amines. 3,759,807, Cl. 204-159.230.

Oshima, Yasuhiro. Method of producing plastic resin lawn-like objects by engraved plate molding. 3,759,769, Cl. 156-61.000.

Osinga, Theo Jan: *See—*
Holscher, Ebo Jan; and Osinga, Theo Jan, 3,759,843.

Ostrander, William M.: *See—*
Caputo, William R.; and Ostrander, William M., 3,759,350.

Ostrowski, Raymond: *See—*
Childs, Edmund; and Ostrowski, Raymond, 3,759,652.

Ota, Sotoyuki: *See—*
Ueno, Ryuzo; Watanabe, Shota; and Ota, Sotoyuki, 3,760,079.

Otis Elevator Company: *See—*
Sieffert, Joseph Edward, 3,759,349.

Otomo, Minoru: *See—*
Shioda, Shigeru; Ogasahara, Fumio; and Otomo, Minoru, 3,759,042.

O'Toole, Gerald; and Puccini, Sergio E., to GTE Automatic Electric Laboratories Incorporated. 179/018.00j Sender pulse timing control. 3,760,116, Cl. 179-18.00j.

Otsuka, Hideo; and Inouye, Ken, to Shionogi & Co., Ltd. (1-Beta-alanine, 15-ornithine)-corticotropin peptides. 3,759,891, Cl. 260-112.500.

Ott, Dale M.; and Riba, Imants, to Crown Zellerbach Corporation. Structure for transporting fluid-entrainable material. 3,759,580, Cl. 302-64.000.

Ott, Kenneth A. Appartatus for inserting insulators in armatures. 3,758,937, Cl. 29-205.00e.

Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargarder, Robert F., to United States of America, Army. Endless track pin assembly. 3,759,586, Cl. 305-11.000.

Outboard Marine Corporation: *See—*
Blanchard, Clarence E.; Turner, Robert K.; and DuBois, Chester, 3,759,493.
Irgens, Finn T., 3,759,238.

Over, William Roderick: *See—*
Long, Robert Alvin; Over, William Roderick; Roberts, Lincoln Edwin; and Shoemaker, John Robert, 3,758,935.

Owens-Corning Fiberglas Corporation: *See—*
Kleist, Dale; and Buchanan, Carl S., 3,759,680.

Owens-Illinois, Inc.: *See—*
Amberg, Ralph G., 3,759,437.
Dietz, Raymond Louis; and McFadden, Allan L., 3,759,727.

Ownes-Illinois, Inc.: *See—*
Uhlig, Albert R., 3,759,410.

Oy E. Sarlin AB: *See—*
Eskola, Kai; and Tyllinen, Yrjo, 3,759,634.

Oy Suomen Vanutehdas-Finnwad Ltd.: *See—*
Korpela, Viejo Gunnar, 3,759,544.

Ozeki, Toshitsugu: *See—*
Fukui, Yukimasa; Kotani, Tsunehiro; and Ozeki, Toshitsugu, 3,759,862.

Packaging Laminators, Inc.: *See—*
Wrede, Leroy E., 3,759,379.

Paculai, Robert E., to GTE Automatic Electric Laboratories Incorporated. Interface system for direct numeric control of automatic wiring machines. 3,760,169, Cl. 235-151.100.

Pagay, Roger Francois Mathieu, to Societe Nouvelle Baele Gangloff. Device for fitting caps to containers. 3,759,012, Cl. 53-306.000.

Page, Littleton Dennis. Apparatus for maintaining the water level within a swimming pool to predetermined limits. 3,759,286, Cl. 137-392.000.

Paget, Charles J., to Lilly, Eli, and Company. Method of suppressing immunoresponse with 1 substituted-3-(2 pyrimidyl)ureas. 3,759,921, Cl. 424-251.000.

Paine, Richard A.: *See—*
Dwyer, James L.; Paine, Richard A.; and Souza, Charles W., 3,759,773.

Pair-X Inc., mesne: *See—*
Davenport, Lonnie Reynolds, 3,759,068.

Paispearl Products, Inc.: *See—*
Wetzold, Paul W., 3,759,737.

Palma, James R. Telescoping arrow. 3,759,519, Cl. 273-106.50r.

Palmer, Nigel I., to Leesona Corporation. Electrically recharged metal/air cell. 3,759,748, Cl. 136-86.00a.

Panelera International Inc.: *See—*
Wolf, Charles B.; and Fey, Maurice G., 3,760,145.

Paniplus Company, The: *See—*
Buddemeyer, Bruce D.; and Moneymaker, John R., 3,759,717.

Paramount Industries, Inc.: *See—*
Weimer, Robert R., 3,759,377.

Parke, Davis & Company: *See—*
Creger, Paul E.; and Neuklis, Winifred A., 3,759,986.

Parke, John Pedlow; and Wilde, Raymond John, to Lever Brothers Company. Detergent composition. 3,759,834, Cl. 252-110.000.

Parker, Alfred Browning: *See—*
Chase, Harold E., 3,759,060.

Parker, Earl E.; and Wismer, Marco, to PPG Industries, Inc. Unsaturated diacrylates polymerized with ultraviolet light. 3,759,808, Cl. 204-159.230.

Parker, Joseph E.: *See—*
Gacek, Joseph A.; and Parker, Joseph E., 3,760,108.

Parkson Corporation: *See—*
Gebauer, Adam George, 3,759,308.

Parrish, David R.: *See—*
Hajos, Zoltan G.; and Parrish, David R., 3,760,087.

Parshina, Maria Kuzminichna: *See—*

Selivanov, Anatoly Grigorievich; Makachev, Nikolai Ivanovich; and Parshina, Maria Kuzminichna, 3,759,299.
Pat & Chuck Oil Well Equipment, Inc.: *See*—
Jones, Harry G., 3,759,489.
Patel, Nagar J., to Westinghouse Electric Corporation. Circuit breaker with overcurrent trip switch. 3,760,307, Cl. 335-13.000.
Patelhold Patentverwertungs & Elektro-Holding AG: *See*—
Bitran, Munir, 3,760,372.
Paterson, William Crawford: *See*—
Chapman, Dennis R.; and Paterson, William Crawford, 3,759,805.
Patrick, Ralph E.; Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil, Inc. Hydrodealkylation process with promoted group VIB metals and promoters. 3,760,023, Cl. 260-672.00r.
Patrie, Jos.; and Legrand, Michel. Electrolysis bath and process for electrolytically coloring anodized aluminum. 3,759,801, Cl. 204-35.00n.
Patronato de Investigacion Cientifica Y Tecnica "Juan de la Cierva" Del Consejo Superior de Investigaciones: *See*—
Aguirre, Jose-Maria Sistiaga; Diaz, Marcelino Torralba; Arribas, Juan-Jose Regidor; and Caride, Miguel Abalie, 3,759,752.
Patterson, Clinton E., to Mate Punch and Die Company. Replaceable tip shear proof punch. 3,759,130, Cl. 83-637.000.
Patterson, Richard A., to Huffman Manufacturing Company, The. Wheel assembly method and apparatus. 3,758,931, Cl. 29-159.020.
Patton, Eugene K.: *See*—
Dawson, Harry J.; Hoftiezer, Wallace A.; Keedy, David E.; Mangus, Ervin E.; Patton, Eugene K.; and Grandfield, Joseph P., 3,759,323.
Pavlov, Vadim Alexandro: *See*—
Trofimov, Igor Dmitrievich; Korobeinikov, Jury Mikhailovich; Pavlov, Vadim Alexandro; and Shevyakov, Lev Nikolaevich, 3,759,034.
Peabody Coal Company: *See*—
Whitten, Charles M.; Mansfield, Vaughn; Petrovic, Louis J.; and Agarwal, Jadgish C., 3,759,673.
Peake, Charles C.: *See*—
Ritland, Paul D.; and Peake, Charles C., 3,759,319.
Peaker, Charles R., to Uniroyal, Inc. Coating compositions and coated articles. 3,759,860, Cl. 260-29.7sq.
Pearrwaller, Erwin, to Sulzer Brothers Limited. Intermediate weft thread supply apparatus for looms. 3,759,300, Cl. 139-122.000.
Pearsall, Samuel H.; and Witthauer, Norman E., Jr., to Cutters Machine Company, Inc. Emergency stop control system for cloth spreading machine. 3,760,250, Cl. 318-282.000.
Pefferman, William C.: *See*—
Brzozowski, Stanley F.; Farmer, Alonzo; and Pefferman, William C., 3,760,071.
Pekosh, Raymond J., to Zenith Radio Corporation. Method for cleaning the sealing land of a cathode ray tube faceplate panel. 3,759,735, Cl. 117-33.50c.
Pell, Robert H., to United States of America, Navy. Circuit for suppressing leakage currents flowing into an underground cable sheath. 3,760,298, Cl. 333-12.000.
Pelousek, Herbert: *See*—
Schnegg, Robert; Pelousek, Herbert; and Dippelhofer, Robert, 3,759,855.
Peltomaki, Olavi. Device for better exploitation of the exhaust energy from an internal combustion engine. 3,759,040, Cl. 60-305.000.
Pemberton, Denver L., to Anaconda Company, The, mesne. Compact conductor. 3,760,093, Cl. 174-128.000.
Pemco Corporation: *See*—
McCray, Richard N., 3,760,134.
Pennwalt Corporation: *See*—
Hager, Robert Bonner; and Walter, Gerald Joseph, 3,759,981.
Morton, Paul Daniel; and Buchholz, Bernard, 3,759,966.
Perazzella, Frank W., to North American Philips Corporation. Shaft coupling with sliding plate. 3,759,067, Cl. 64-31.000.
Percorini, Marcello; DiNunzio, Vittorio; and Careglio, Giuseppe, to Compagnia Italiana Westinghouse Freni e Segnali. Static inverter. 3,760,258, Cl. 321-11.000.
Peress, Joseph S. Flexible joints. 3,759,550, Cl. 285-11.000.
Performance Equipment Inc.: *See*—
Jordan, William L., 3,758,958.
Peroutky, Donald C., to General Electric Company. Capacitive keyswitch. 3,760,243, Cl. 317-249.00r.
Perry, D. Cameron, to Armco Steel Corporation. Aluminum-bearing precipitation-hardening stainless steel of high retained toughness. 3,759,757, Cl. 148-38.000.
Perry, James E.: *See*—
Daly, Patrick J.; Grogg, William E.; Layman, Stuart F.; Orlando, Harold J.; Perry, James E.; and Van Derlaske, Dennis P., 3,760,181.
Personal Products Company: *See*—
Loyer, Michael, 3,759,258.
Peruglia, Marco, to Fiat Societa per Azioni. Anti-skid braking system with two modes of operation. 3,759,583, Cl. 303-21.00f.
Pessina, Raffaele. Method for preparing tetra-N,N,N,N'-(2-hydroxyethyl)-ethylenediamine tetranitrate and salts thereof. 3,759,977, Cl. 260-467.000.
Peter, Richard: *See*—
Angliker, Hans-Joerg; and Peter, Richard, 3,759,894.
Peter, Richard; Angliker, Hans-Joerg; and Casa, Angelo Della, to Ciba-Geigy AG. Anthraquinoid dyestuffs. 3,759,957, Cl. 260-368.000.
Peter, Richard; Angliker, Hans-Joerg; and Casa, Angelo Della, to Ciba-Geigy AG. Anthraquinoid dyestuffs. 3,759,958, Cl. 260-372.000.
Peter, Richard; Angliker, Hans-Joerg; and Casa, Angelo Della, to Ciba-Geigy AG. Anthraquinoid dyestuffs. 3,759,959, Cl. 260-376.000.
Petersen, Svend A. H.; and Neary, Padraic E., to Hanson Limited. Dial mounting for weighing scale. 3,759,338, Cl. 177-173.000.
Peterson, John Allan, to Honeywell Information Systems Inc. Document loader. 3,759,509, Cl. 271-150.000.
Peterson, Robert A., to Caterpillar Tractor Company. Stabilizer for articulated wheel loaders. 3,759,541, Cl. 280-112.00r.
Peterson, William C. Apparatus for removing overlapped siding materials. 3,758,946, Cl. 30-257.000.
Peterson, William R., Jr.: *See*—
Sollott, Gilbert P.; and Peterson, William R., Jr., 3,759,967.
Petigara, Ramesh B.: *See*—
Yale, Harry Louis; and Petigara, Ramesh B., 3,759,923.
Petkewicz, Frank J.: *See*—
Hamilton, Richard J.; and Petkewicz, Frank J., 3,759,441.
Petro-Tex Chemical Corporation: *See*—
Turner, Nathan L., 3,759,886.
Petrocci, Alfonso N.: *See*—
Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., 3,759,995.
Petrovic, Louis J.: *See*—
Whitten, Charles M.; Mansfield, Vaughn; Petrovic, Louis J.; and Agarwal, Jadgish C., 3,759,673.
Pfeiffer, Arthur, Vakuumtechnik GmbH: *See*—
Becker, Willi, 3,759,626.
Pfeuffer, Anton. Dissolver for solid and liquid materials. 3,759,491, Cl. 259-4.000.
Pfizer, Inc.: *See*—
Nakanishi, Susumu, 3,759,898.
Pfuller, Kurt: *See*—
Muize, Heinz; Barth, Gerhard; and Pfuller, Kurt, 3,759,070.
Philco-Ford Corporation: *See*—
Cushing, Charles J.; and Schwind, Kurt C., 3,759,620.
Phillips, Herman L. Filling feeler device for looms. 3,759,301, Cl. 139-281.000.
Phillips Petroleum Company: *See*—
Dunn, Howard E., 3,760,027.
Reusser, Robert E.; and Turk, Stanley D., 3,760,026.
Short, James N., 3,759,764.
Stapp, Paul R., 3,759,956.
Pianka, Max, to Murphy Chemical Company Limited, The. Fungicidal carbonates and thiolocarbonates of dihalodinitro phenols. 3,759,972, Cl. 260-463.000.
Piccolo, Luigi: *See*—
Calcagno, Benedetto; Piccolo, Luigi; and Ghirga, Marcello, 3,760,066.
Pierce-Pacific Manufacturing, Inc.: *See*—
Seaberg, Richard D., 3,759,564.
Pike, John E.: *See*—
Beal, Philip F., III; and Pike, John E., 3,759,965.
Lincoln, Frank H., Jr.; and Pike, John E., 3,759,978.
Pilloff, Herschel S.; Searless, Stuart K.; and Djeu, Nicholas I., to United States of America, Navy. Continuous wave, free-burning flame laser. 3,760,293, Cl. 331-94.500.
Pillsbury Company, The: *See*—
Burgess, Ralph D., 3,759,126.
Piotroski, Peter N.: *See*—
Walkley, James A.; Piotroski, Peter N.; and O'Gara, George W., 3,759,382.
Pisani, Luigi, to Rimoldi, Virginio, & C., S.p.A. Apparatus for the closure in piping of opened fabrics to wind up rolls for producing bias tapes. 3,759,198, Cl. 112-63.000.
Pitchon, Esra: *See*—
Schulman, Marvin; Pitchon, Esra; and Anderson, Charles D., 3,759,716.
Pitkethly, Robert Chalmers: *See*—
Davies, Evan Ellis; Elkins, John Stanley; and Pitkethly, Robert Chalmers, 3,759,823.
Pitney-Bowes, Inc.: *See*—
Franchinot, Paul G.; and Kresan, Lawrence J., 3,759,178.
Walkley, James A.; Piotroski, Peter N.; and O'Gara, George W., 3,759,382.
Pitroda, Satyan G.; and Rekiere, Bernard J., to GTE Automatic Electric Laboratories Incorporated. Asynchronous data transmission over a pulse code. 3,760,371, Cl. 340-172.500.
Pitschi, Frank: *See*—
Spinner, Georg; and Pitschi, Frank, 3,760,306.
Pitts, James J.; and Babiec, John S., Jr., to Olin Corporation. Process for trimerizing polyisocyanates with pyrazins catalysts. 3,759,916, Cl. 260-77.5nc.
Plamper, Gunter F., to MTD Products Inc. Variable speed drive having speed limiting means. 3,759,342, Cl. 180-70.00r.
Plasser, Franz, Bahnbaumaschinen Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 3,759,334.
Plath, Ernst Dieter, to Mayer & Cie Maschinenfabrik. Knitting pattern and the like and electro-optic scanning mechanism therefor. 3,760,188, Cl. 250-557.000.
Platz, Gerald M.; and Greenberg, Daniel H., to National Distillers and Chemical Corporation. Apparatus for radiation polymerization. 3,759,811, Cl. 204-193.000.
Plewka, Anna B. Headlamps of vehicles. 3,759,084, Cl. 240-7.10r.
Ploeger, Kenneth C.: *See*—
Evans, Rubert V.; Stiles, Thomas M.; and Ploeger, Kenneth C., 3,759,214.

Plourde, Jacques. Selective air dosing means for cigarettes. 3,759,268, Cl. 131-9.000.
Plunk, Troy E.: *See—*
Hadad, Joseph D.; Plunk, Troy E.; and Banks, Donald S., 3,760,420.
Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Greiner, Henri; Masson, Yves; and Olagnier, Jean, 3,759,306.
Podmaniczky, Andras; and Kiss, Barnabas, to Merestechnikai Kozponti Kutato Laboratorium. Measurement of colour of spherical OS quasi-spherical surfaces. 3,759,619, Cl. 356-173.000.
Poindexter, Carleton H., to GTE Automatic Electric Laboratories, Incorporated. Gas tube protector having an internal fuse link. 3,760,227, Cl. 317-16.000.
Polansky, Maurice I., to Quebec Vending Machine Co., Inc. Heating cabinet for treating nut meats. 3,760,155, Cl. 219-399.000.
Polaroid Corporation: *See—*
Aimo, Karl H.; and Baker, Philip G., 3,759,153.
Eloranta, Vaito K.; and Ruggles, Benjamin C., 3,759,609.
Pollard, John H.: *See—*
Kaldenback, Kenneth H.; Kovals, John; and Pollard, John H., 3,759,282.
Polshikov, Ivan Vasilievich; Kuruin, Lev Nikolaevich; and Titarenko, Alexandr Timofeevich. V-belt. 3,759,112, Cl. 74-231.000.
Polysius AG: *See—*
Vering, Antonius; Kluger, Alois; and Eiring, Karl, 3,759,369.
Pommer, Horst: *See—*
Freyschlag, Herwig; Stolp, Fritz; Reif, Werner; and Pommer, Horst, 3,760,004.
Poole, Clarence A. Semiconductor heat-fault detector. 3,760,182, Cl. 250-85.000.
Popp, Burkard: *See—*
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Porret, Daniel: *See—*
Baizer, Hans; Habermeier, Juergen; and Porret, Daniel, 3,759,954.
Port, Morton I.: *See—*
Schwartz, Harold A.; and Port, Morton I., 3,760,046.
Porter, Don B., Jr. Method and means for acoustic energy conversion. 3,760,139, Cl. 219-10.650.
Porter, Lew F.: *See—*
Mravic, Brian; and Porter, Lew F., 3,759,706.
Portnoy, Samuel. Elastic power transmitting element. 3,759,066, Cl. 64-27.00s.
Poschadel, Werner; and Hofgen, Gunter, to International Standard Electric Corporation. Method of and arrangement for varying the ratio of carrier power to sideband power in ILS navigation systems. 3,760,419, Cl. 343-109.000.
Posl, Rudolf; and Popp, Burkard, to Siemens Aktiengesellschaft. Apparatus for controlling a plurality of injection molding machines. 3,760,251, Cl. 318-601.000.
Postmaster General, Her Majesty's: *See—*
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Duerdoth, Winston Theodore; and Hughes, Charles Joseph, 3,760,115.
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Pouch, Thomas M.: *See—*
Willson, Elmer E.; and Pouch, Thomas M., 3,759,418.
Pouillon, Emile R. J., to Societe Anonyme Cribla. Method and apparatus for separating mixtures of fine grain materials. 3,759,385, Cl. 209-165.000.
PPG Industries, Inc.: *See—*
Bowser, George H., 3,758,996.
Brzozowski, Stanley F.; Farmer, Alonzo; and Pefferman, William C., 3,760,071.
Chang, Wen-Hsuan; Dowbenko, Rostyslaw; and Makhlouf, Joseph M., 3,759,854.
Parker, Earl E.; and Wismer, Marco, 3,759,808.
Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,759,813.
Prahl, Herman. Locking mechanism having key operation on two sides. 3,759,074, Cl. 70-143.000.
Preston, Elizabeth: *See—*
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Pretorius, Victor; and Hahn, Hans Helmut. Detection in chromatography. 3,759,816, Cl. 204-299.000.
Price Company Limited, The: *See—*
Mihelich, Walter G., 3,759,785.
Price, David: *See—*
Bradley, Gordon Frank; Price, David; and Hamilton, Alexander, 3,759,733.
Procter & Gamble Company, The: *See—*
Curry, John D., 3,760,000.
Production Technology Inc.: *See—*
Hilgers, Howard M., 3,759,535.
Produits Chimiques Pechiney-Saint-Gobain: *See—*
Thomas, Jean Claude; Fournel, Francis; and Soussan, Lyon, 3,759,885.
Prolizenz AG: *See—*
Gyongyos, Ivan, 3,759,313.
Prouty, Robert E.; and Bear, Herman G., to Essex International, Inc. Terminal construction for electrical conductors. 3,760,342, Cl. 339-272.00r.
Provenzano, Joseph Charles; Hiestand, David F.; and Krabec, James A., to GTE Automatic Electric Laboratories, Incorporated. Apparatus for testing stress-sensitive semiconductor transducer. 3,759,082, Cl. 73-1.00b.
Puccini, Sergio, to GTE Automatic Electric Laboratories, Incorporated. Traffic monitor for data processing system. 3,760,105, Cl. 179-8.00a.
Puccini, Sergio E.: *See—*
O'Toole, Gerald; and Puccini, Sergio E., 3,760,116.
Pugin, Andre; Hopee, Heinrich; and Gallegra, Pasquale, to Ciba-Geigy AG. Tert-silyl and tert-alkyl phthalocyanine dyestuffs. 3,759,947, Cl. 260-314.500.
Purple, Edward B., to Nash Bros. Co. Tangible energy absorbing bumper mounting device. 3,759,351, Cl. 188-1.00c.
Putney, David H.; Lindau, John H.; and West, Charles L., to Stratford Engineering Corporation. Contactor improvements. 3,759,318, Cl. 165-108.000.
Quadri, Farooq M., to GTE Automatic Electric Laboratories, Incorporated. Magnetic domain logic decoder. 3,760,386, Cl. 340-174.0tf.
Quady, John C., to Rohr Corporation. Tangential flow pulse jet pump propulsion for water craft. 3,759,213, Cl. 115-16.000.
Quaker Oats Company: *See—*
Burkwall, Morris P., Jr., 3,759,714.
Quate, Calvin F., to Leland Stanford Junior University, The Board of Trustees of. Method of and apparatus for signal processing. 3,760,172, Cl. 235-181.000.
Quebec Vending Machine Co., Inc.: *See—*
Polansky, Maurice I., 3,760,155.
Quenneville, Raymond N., to United Aircraft Corporation. Bidirectional locking device. 3,759,358, Cl. 192-8.00c.
Questor Corporation: *See—*
Bagley, Stuart C., 3,759,215.
Quinder Electronics, Inc.: *See—*
Epstein, Philip L., 3,760,290.
Quinn, Robert C.: *See—*
Collins, Leland F.; Quinn, Robert C.; and Wilhelmsen, Paul G., 3,759,836.
Quiriunen, Marius, to U.S. Philips Corporation. Print hammer striking moving type at an angle to compensate for frictional force. 3,759,174, Cl. 101-93.00c.
R & L Molecular Research Ltd.: *See—*
Lemieux, Raymond Urgel; and Chin, Clinton Gordon, 3,759,905.
Raal, Stefan: *See—*
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Rabenecker, Horst: *See—*
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Rachlin, Joel R.; and Neuder, Rudolph Otto. Ventilating air distributing channel-duct joint. 3,759,159, Cl. 98-40.00c.
Radlinsky, Raymond: *See—*
Gregor, John S.; and Radlinsky, Raymond, 3,760,366.
Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, to PPG Industries, Inc. Electrolytic cell. 3,759,813, Cl. 204-256.000.
Ragsdale, Charles W.; and Wright, Edward A., to United States of America, Army. Audio electrocardiogram monitor. 3,760,100, Cl. 179-1.000.
Rainey, Thomas Milton; and Schwartz, Martin. Fire extinguishing method. 3,759,330, Cl. 169-2.00r.
Rakoutz, Michel: *See—*
Le Bris, Louis; Michelet, Daniel; and Rakoutz, Michel, 3,759,804.
Raleigh Industries Limited: *See—*
Toplis, John Geoffrey, 3,759,352.
Ralston Purina Company: *See—*
Leopiktie, Stephanus F.; and Flier, Ronald Jacob, 3,759,715.
Young, Gar, 3,759,721.
Rambo, Eivind M.: *See—*
Wolfe, Walter W.; Messner, Jack D.; and Rambo, Eivind M., 3,759,227.
Randell, Donald Richard: *See—*
Chalmers, Alexander Michael; and Randell, Donald Richard, 3,759,926.
Randolph, Alexander. Chess game pieces. 3,759,523, Cl. 273-137.00r.
Rang, Hendrik J.; and Kaarsemaker, Sjoerd, to Stamicarbon N.V. Process for the preparation of polymers or copolymers. 3,759,887, Cl. 260-94.90r.
Ransburg Electro-Coating Corporation: *See—*
Fram, Morris; Hetherington, Robert D.; and Freeman, Craig, 3,759,450.
Ransome, Frank F., 1/2 to Kinder, Gordon T. Composite load bearing panels. 3,759,009, Cl. 52-598.000.
Ranucci, Joseph Anthony, to Hoffmann-La Roche Inc. Ultrasonic deaggregation of the copper complex of -methoxy-1-phenazinol 5,10-dioxide. 3,760,075, Cl. 424-245.000.
Rapson, William Howard, to ERCO Industries Limited. Production of chlorine dioxide. 3,760,065, Cl. 423-478.000.
Rassi, Christian A.; and Dick, Lyonell P., to Caterpiller Tractor Company. Apparatus for skiving reinforced hydraulic hose. 3,759,121, Cl. 82-20.00r.
Rast, Gustaf J., Jr.; and Barley, Thomas A., to United States of America, Army. Synchronous DC power supply. 3,760,256, Cl. 321-9.00r.
Rauner, Frederick J.; and Engebrecht, Ronald H., to Eastman Kodak Company. Nitrogen linked appending quinone diazide light sensitive vinyl polymer compositions and elements. 3,759,711, Cl. 96-36.000.
Raychem Corporation: *See—*
Levinsohn, Richard; and Jervis, James E., 3,759,552.

Wetmore, Judson Douglas, 3,758,916.
Raymond, Maurice A.: *See—*
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Hadad, Joseph D.; Plunk, Troy E.; and Banks, Donald S., 3,760,420.
RCA Corporation: *See—*
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Hernqvist, Karl Gerhard, 3,760,296.
Kosonocky, Walter Frank, 3,760,202.
Mason, Robert Jean; and Landry, Norman Richard, 3,760,305.
Smith, Lawrence Edward, 3,760,222.
R.D.T. International Inc.: *See—*
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Redactron Corporation: *See—*
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Irvin, James Ledson, 3,760,270.
Reed Industries, Inc.: *See—*
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Reed, Lee R.: *See—*
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Attane, Edward C.; Mears, David E.; and Reeg, Cloyd P., 3,759,819.
Reese, John B. Marine propeller lock. 3,759,076, Cl. 70-232.000.
Regie Nationale des Usines Renault: *See—*
Brille, Maurice G., 3,759,638.
De Castelet, Gaetan De Coye, 3,759,802.
de Lavenne, Hubert; and Leger, Andre, 3,758,911.
Regneault, Marcel; and Le Creurer, Maurice, to Automobiles Peugeot. Injection devices for compression-ignited internal combustion engines. 3,759,239, Cl. 123-326.000.
Regnier, Marc Andre: *See—*
Leger, Marc Jean Pierre; Lerouge, Claude Paul Henri; and Regnier, Marc Andre, 3,760,361.
Rehmus, Frederick H.: *See—*
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Reiff, Almer A.: *See—*
Balzer, Claude P.; Reiff, Almer A.; and Corman, Edward M., 3,759,000.
Reimer, Robert M., to General Electric Company. Engine inlet distortion testing apparatus. 3,759,091, Cl. 73-116.000.
Reinecke, Gerd-Konrad: *See—*
Salamon, Manfred; Hagebaum, Hans-Jurgen; Wandel, Martin; Muhlhausen, Cornelius; Bau, Werner; and Reinecke, Gerd-Konrad, 3,759,742.
Reinke, George W., to Screen Printing Systems, Inc. Method of making a metal printing screen. 3,759,799, Cl. 204-16.000.
Reinke, George W., to Screen Printing Systems, Inc. Seamless rotary printing screen and method of making same. 3,759,800, Cl. 24-16.000.
Reis, Robert D., to United Electric Controls Company. Control instrument for two or more switches. 3,760,138, Cl. 200-835.00a.
Rekiere, Bernard J.: *See—*
Pitroda, Satyan G.; and Rekiere, Bernard J., 3,760,371.
Renfrew, Edgar E.; and Zanella, Dominic A., to American Aniline Products, Inc. Process for dyeing polyester fabrics with disazo dyestuffs. 3,759,663, Cl. 8-41.00c.
Rennie, George Kerr: *See—*
Easton, Donald Bannerman James; Rennie, George Kerr; and Storer, Christopher Charles, 3,759,833.
Rental Equipment Manufacturing Co.: *See—*
Thompson, David R., 3,758,967.
Repasy, Andy J.: *See—*
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Research Technology, Incorporated: *See—*
Short, Ray L., Jr.; Bowen, Howard; and Henderson, David L., 3,759,095.
Retrochko, Robert P.: *See—*
Wheeler, John B., III; Sonia, John; Hayes, Thomas E.; and Retrochko, Robert P., 3,760,055.
Reusche, Wolfgang; and Holtschmidt, Hans, to Bayer Aktiengesellschaft. Dichloromethylene carbamic acid esters and thioesters. 3,759,975, Cl. 260-465.00d.
Reusser, Robert E.; and Turk, Stanley D., to Phillips Petroleum Company. Synthesis of di-tert-butylethylene using olefin disproportionation. 3,760,026, Cl. 260-683.00d.
Rex Chainbelt Inc.: *See—*
Johnston, William F., 3,759,579.
Reynolds Metals Company: *See—*
Matthews, Stephen B., 3,760,036.
Nighman, William, 3,759,309.
Reynolds, Ralph K.: *See—*
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargarder, Robert F., 3,759,586.
Reynolds, Robert S.; and Nordberg, Svein T., to E-Systems Incorporated, mesne. Matrix switch. 3,760,360, Cl. 340-166.00r.
Reyrolle Parsons Limited: *See—*
Smith, Allen, 3,759,016.
Rheinmetall G.m.b.H.: *See—*
Fammler, Karl, 3,759,136.
Rhodes, Philip H.; and Ahr, Robert L., to Emery Industries, Inc. Metal halide and polyglycerol carboxylic acid ester stabilizers for vinyl chloride polymers. 3,759,856, Cl. 260-23.0xa.
Rhone-Poulenc S.A.: *See—*
Ciraudon, Raymond, 3,759,938.
Jeanmart, Claude; Messer, Mayer Naoum; and Simon, Pierre, 3,759,924.
Le Bris, Louis; Michelet, Daniel; and Rakoutz, Michel, 3,759,804.
Ribka, Joachim: *See—*
Kuhne, Rudolf; Hamal, Heinrich; Geissler, Georg; Herbst, Willy; and Ribka, Joachim, 3,759,731.
Richter, Roy E., to Crager Industries, Inc. Custom wheel assembly. 3,759,576, Cl. 301-90.0dn.
Rieschell, Hans: *See—*
Wenzel, Jorg; and Rieschell, Hans, 3,759,409.
Rifkin, A., Co.: *See—*
Rifkin, Arnold S., 3,759,073.
Rifkin, Arnold S., to Rifkin, A., Co. Flexible walled security container. 3,759,073, Cl. 70-68.000.
Riggs & Lombard, Inc.: *See—*
Holm, William J., 3,758,924.
Riken Vitamin Oil Co., Ltd.: *See—*
Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, 3,759,718.
Riker Laboratories, Inc.: *See—*
Robertson, Jerry E., 3,759,993.
Riley, Edward D., to United States of America, Army, mesne. Device for detecting flame out in a gas turbine. 3,760,398, Cl. 340-228.100.
Rimoldi, Virginio, & C., S.p.A.: *See—*
Marforio, Nerino, 3,759,200.
Pisani, Luigi, 3,759,198.
Riseman, Jacob: *See—*
Duffy, Michael C.; Riseman, Jacob; and Wu, Bevan P. F., 3,760,242.
Ritland, Paul D.; and Peake, Charles C., to Westinghouse Electric Corporation. Method for increasing effective scavenging vent steam within heat exchangers which condense vapor inside long tubes. 3,759,319, Cl. 165-111.000.
Ritter, Ernst: *See—*
Staudt, Heinrich; and Ritter, Ernst, 3,759,236.
Rivinius, Theodore. Hydraulic control system for road graders. 3,759,333, Cl. 172-781.000.
Rix, Albert; Werner, Georg; and Euchs, Hans, to Olympia Werke AG. Apparatus for the control of type printing sequences. 3,759,360, Cl. 197-17.000.
Rizzer, Alexander J., to Cities Service Company. Process of sealing joints with sealant composition. 3,759,780, Cl. 156-335.000.
Riba, Imants: *See—*
Ott, Dale M.; and Riba, Imants, 3,759,580.
Ro-Search Incorporated: *See—*
Auberry, Horace Ray; and Liebscher, Anton I., 3,758,903.
Robb, Derek John Mac Donald; and Samuel, John Raymond, to Lever Brothers Company. Detergent composition. 3,759,846, Cl. 252-527.000.
Roberts, Evan D.: *See—*
Crowley, Duane E.; Hoffmann, Roy M.; and Roberts, Evan D., 3,759,284.
Roberts, James C. Planter pot sprinkler unit. 3,758,986, Cl. 47-38.000.
Roberts, Lincoln Edwin: *See—*
Long, Robert Alvin; Over, William Roderick; Roberts, Lincoln Edwin; and Shoemaker, John Robert, 3,758,935.
Roberts, Lincoln Edwin, to AMP Incorporated. Pre-loaded electric connector. 3,760,335, Cl. 339-99.00r.
Roberts, Thomas G.; Hutcheson, Guilford J.; and Rust, Charles M., to United States of America, Army. Thermal mixing gas laser. 3,760,294, Cl. 331-94.500.
Robertshaw Controls Company: *See—*
Clifford, Joseph, 3,759,654.
McIntosh, Harold A.; and Yeaman, George A., 3,760,309.
Robertson, H. H., Company: *See—*
Howell, Norbert C.; Tischuk, Walter; and Welsh, Thomas M., 3,759,479.
Robertson, Jackson P., Sr. Extra heavy duty multi-disc harrow with automatic level control. 3,759,332, Cl. 172-539.000.
Robertson, Jerry E., to Riker Laboratories, Inc. Fluoromethanesulfonic acid derivatives. 3,759,993, Cl. 260-556.00a.

Robinson, Alfred G.; Blood, Alden E.; and Hagemeyer, Hugh J., Jr., to Eastman Kodak Company. Triols by hydrogenation of bicyclic furodioxles. 3,760,011, Cl. 260-635.00e.

Robinson, David Peter; and Dolby, Ray Milton, to Dolby Laboratories Inc. Level setting in noise reduction systems. 3,760,102, Cl. 179-1.00r.

Robinson, Max C. Capacitance thermometer. 3,759,104, Cl. 73-362.00r.

Robinson, Sirman. Indoor-outdoor cooker. 3,759,164, Cl. 99-413.000.

Robison, Michael Mullen; and Finch, Neville, to Ciba-Geigy Corporation. 3H-imidazo(4,5-c)pyridines. 3,759,933, Cl. 260-295.00k.

Robles, Joseph: *See—*
Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, 3,759,869.

Rockwell Manufacturing Company: *See—*
Medwig, William J.; and Koch, Ronald N., 3,759,100.

Roeder, George, to Messer Griesheim G.m.b.H. Method and apparatus for preventing relative motions. 3,759,502, Cl. 266-23.00e.

Rogers, Dale W.: *See—*
Kiefer, Edward J.; and Rogers, Dale W., 3,760,226.

Rogers, Don A., Jr.; and Smith, James D. B., to Westinghouse Electric Corporation. Solvent epoxy resin composition and an electrical member impregnated therewith. 3,759,866, Cl. 260-37.0ep.

Rogers, Gordon Leonard; and Stephens, Noel William Frank, to National Research Development Corporation. Methods of and apparatus for effecting optical measurement and analysis. 3,759,618, Cl. 356-156.000.

Rohm & Haas Company: *See—*
Kittke, Roger H., 3,759,915.

Rohr Corporation: *See—*
Gross, Donald S., 3,758,933.
Quady, John C., 3,759,213.

Roles, David Jack: *See—*
Judkins, Thomas E.; and Roles, David Jack, 3,759,001.

Romney, Russell H. Fabric display and merchandising system. 3,759,398, Cl. 211-46.000.

Rompa, Jozef Johannes Theresia. Lift door. 3,758,989, Cl. 49-120.000.

Rondeau, Herbert F.; and Ettinger, Donald H., to Warren Fastener Corporation. Welding stud. 3,760,143, Cl. 219-98.000.

Ronson Corporation: *See—*
Sampson, Peter Steer, 3,759,656.

Rorer, William H., Inc.: *See—*
Diamond, Julius; Douglas, George H.; and Burns, Bernard J., 3,759,994.

Rosauer, Peter J.: *See—*
O'Connor, Donald T.; Rosauer, Peter J.; and Lorenzi, Donald E., 3,760,263.

Rosby, Sven-Olof: *See—*
Lindstrom, Bengt; Citron, Bengt; Nelenius, Erik; Karlsson, Ingemar; and Rosby, Sven-Olof, 3,759,434.

Rose, Boyd W.; and Thornton, George W., to FMC Corporation. Egg processing apparatus. 3,759,368, Cl. 198-76.000.

Rosen, William E.; and Berke, Philip A., to Stockton Chemicals, Inc., mesne. Salicylates. 3,759,980, Cl. 260-480.000.

Rosenbaum, Glenn P., to CMI Corporation. Bottom-dumping trailer with shiftable closure assembly. 3,759,573, Cl. 298-29.000.

Rosenfeld, Jack L.: *See—*
Kurtzberg, Jerome M.; Rosenfeld, Jack L.; and Villani, Raymond D., 3,760,365.

Ross, Donald L.: *See—*
Coon, Clifford L.; Hill, Marion E.; and Ross, Donald L., 3,759,998.

Ross, Joseph I.; and Sears, Kay G., said Sears assor. to said Entron, Inc. CATV multi-tap distribution box with a key actuated connector for each of a plurality of taps. 3,760,130, Cl. 200-42.00r.

Ross, Sigmund L., to Shuffman, Oscar. Cryo-thermal process for fracturing rock formations. 3,759,329, Cl. 166-308.000.

Rotaflex Great Britain Limited: *See—*
Howard, John, 3,760,133.

Roteet, Charles S., III, to Grace, W. R., & Co. Extrusion cutting device. 3,759,642, Cl. 425-72.000.

Roth, Shirley H., to Cities Service Company. Novel intumescent coated articles. 3,759,741, Cl. 117-136.000.

Roth, Sold S. Television receiver including a large screen projection system. 3,760,096, Cl. 178-5.4es.

Rotter, Friedrich, to Siemag Siegener Maschinenbau G.m.b.H. Roll supporting means for a rolling mill. 3,759,078, Cl. 72-238.000.

Roudil, Maurice Jean Clement, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Method and means for opposing the rotation of a windmilling turbojet rotor during flight. 3,759,467, Cl. 244-53.00r.

Roussel-UCLAF: *See—*
De Fossey, Bernard Mathieu, 3,760,073.

Roussopoulos, Paul: *See—*
Boudouris, Georges; Kalopissis, Gregoire; Levesque, Jean-Luc; and Roussopoulos, Paul, 3,760,148.

Rowlands, Tom; and Hillman, James George Edward, to Molins Machine Company. Apparatus for handling rod-like articles. 3,759,408, Cl. 214-302.000.

Rozentals, Alfreds, to Heim Universal Corporation. Rod end bearing assembly. 3,759,589, Cl. 308-72.000.

Rozet, David, to Chemetron Corporation. Phosphor bronze arc welding electrode for alternating current. 3,760,146, Cl. 219-146.000.

Ruben, Murray A.; and Collings, Robert F., to Voorhees, Alan M., mesne. Programmable keyboard and keys. 3,760,409, Cl. 340-365.00s.

Rubin, Gotthard George: *See—*
Scrivo, Leonard; La Plante, Lionel J.; Chumenti, Vincent A.; and Rubin, Gotthard George, 3,758,951.

Rubin, Kenneth D.: *See—*
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Rucker, Dietrich: *See—*
Metzger, Carl; Rucker, Dietrich; and Eue, Ludwig, 3,759,939.

Ruda, Raymond J., to Bagcraft Corporation of America. Plastic bag having reclosing means. 3,759,438, Cl. 229-65.000.

Rudenko, Valery Mikhailovich: *See—*
Axelrod, Lev Samuilovich; Akatov, Alexandr Vasilievich; Rudenko, Valery Mikhailovich; Fedorov, Viktor Viktorovich; Barashkov, Ruslan Yakovlevich; and Garbuzovsky, Boleslav Iosifovich, 3,759,494.

Rudle, August; and Striebel, Kurt, to Bizerba-Werke Wilhelm Kraut KG. Process for milking animals and apparatus for use therewith. 3,759,226, Cl. 119-14.360.

Rudoff, Stanley; and De Thomas, Waldo R., to GAF Corporation. Catalyst for preparing 1,4-butanediol. 3,759,845, Cl. 252-466.000.

Rudolph, Ralph G., to United States Steel Corporation. Beam current limiting circuit. 3,760,279, Cl. 328-8.000.

Rudy, Marion F., to Bogert, Robert C. Method for custom fitting an inflatable bladder to wearer's foot. 3,760,056, Cl. 264-299.000.

Ruggles, Benjamin C.: *See—*
Eloranta, Vaito K.; and Ruggles, Benjamin C., 3,759,609.

Ruhnke, Lothar H., to United States of America, National Aeronautics and Space Administration. Rocket borne instrument to measure electric fields inside electrified clouds. 3,760,268, Cl. 324-72.000.

Rummel, Theodor, to Siemens Aktiengesellschaft. Initiating the pulling of a crystalline body from a molten stock. 3,759,670, Cl. 23-301.0sp.

Rupert Manufacturing Company, Inc.: *See—*
Evans, Rubert V.; Stiles, Thomas M.; and Ploeger, Kenneth C., 3,759,214.

Russell, Edward J.: *See—*
Martuch, Leon L.; and Russell, Edward J., 3,758,979.

Russell, Stanley K., to Ferro Corporation. Cooling means for forming glass fibers. 3,759,681, Cl. 65-12.000.

Rust, Charles M.: *See—*
Roberts, Thomas G.; Hutcheson, Guilford J.; and Rust, Charles M., 3,760,294.

Rutgerswerke Aktiengesellschaft: *See—*
Omran, Jaafar; Franck, Heinz-Gerhard; and Zander, Maxmillian, 3,759,848.

Ruthman, Jerome E.; Smith, William L.; and Forte, Robert A., to Ruthman Machinery Company, The. Device for producing coolant mist. 3,759,449, Cl. 239-416.200.

Ruthman Machinery Company, The: *See—*
Ruthman, Jerome E.; Smith, William L.; and Forte, Robert A., 3,759,449.

Rutz, Hans; and Gubler, Kurt, to Ciba-Geigy Corporation. Aliphatic oxalkyl-2,4,5-T. 3,759,945, Cl. 260-309.000.

Ruyle, William V.: *See—*
Shen, Tsung-Ying; Witzel, Bruce E.; Walford, Gordon L.; and Ruyle, William V., 3,759,948.

Ryaboi, Vladimir Ilich: *See—*
Konev, Vyacheslav Alexandrovich; and Ryaboi, Vladimir Ilich, 3,759,386.

Rybicki, Robert C., to United Aircraft Corporation. Compound bearing for connecting a helicopter blade to a helicopter rotor. 3,759,631, Cl. 416-134.000.

Rybicki, Robert C., to United Aircraft Corporation. Articulated helicopter rotor. 3,759,632, Cl. 416-134,000.

Rychlewski, Thaddeus V.; and Serang, Abdulgafoor M., to GTE Sylvania Incorporated. Electret phonograph pickup. 3,760,126, Cl. 179-100.4lb.

S.A. Texaco Belgium N.V.: *See—*
Webb, Allen N.; and Lippens, Bernardus Cornelis, 3,759,990.

Saarup, Gary C. Ingot mold separator. 3,759,316, Cl. 164-405.000.

Sach, Gary M., to United States of America, Navy. Low-reflection filter for cathode ray tube face plate. 3,760,215, Cl. 313-92.00r.

Saegusa, Makoto: *See—*
Kawana, Masashi; Saegusa, Makoto; Ohsugi, Kenzo; and Nohara, Naohiro, 3,759,701.

Saiko, Otto: *See—*
Schorre, Gustav; Nowak, Herbert; and Saiko, Otto, 3,759,930.

Saint-Gobain: *See—*
Gimenez, German Artigas, 3,759,684.

Saito, Takashi; and Iida, Toshihide, to Canon Kabushiki Kaisha. Cleaning device in electrophotography. 3,759,220, Cl. 118-261.000.

Saito, Takashi; and Ando, Yujiro, to Canon Kabushiki Kaisha. Corona discharge device for removing dielectric liquid. 3,760,152, Cl. 219-384.000.

Sakai, Sumio: *See—*
Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.

Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Apex seal for rotary piston engine. 3,759,534, Cl. 277-235.00r.

Sakamoto, Yoichi, to Matsushita Electric Industrial Co., Ltd. Voltage memory apparatus. 3,760,193, Cl. 307-233.000.

Sakler, Stephen Allen: *See—*
Mattia, Francis Joseph; and Sakler, Stephen Allen, 3,760,069.

Salamon, Manfred; Hagebaum, Hans-Jurgen; Wandel, Martin; Muhlhausen, Cornelius; Bau, Werner; and Reinecke, Gerd-Konrad, to Bayer Aktiengesellschaft. Textile floor covering. 3,759,742, Cl. 117-161.0kp.

Salata, Dominic R. Massaging device. 3,759,250, Cl. 128-57.000.

Salatiello, Peter P.: *See—*
Mueller, Max B.; Salatiello, Peter P.; and Kaufman, Herman S., 3,759,883.

Sale, Anthony John Hanson: *See—*
Gunson, Sam; Heyes, Alan; and Sale, Anthony John Hanson, 3,759,723.

Salmond, William G.: *See—*
Linder, Jerome; Mattner, Paul G.; and Salmond, William G., 3,759,920.

Samour, Carlos M., to Kendall Company, The. Anionic complexes of monomeric emulsion stabilizers. 3,759,982, Cl. 260-485.00j.

Sampei, Kazuf, to Alps Motorola, Inc. Record mechanism for cartridge tape player-recorder. 3,759,530, Cl. 274-4.00b.

Sampei, Nobyoshi; Tomita, Kazuo; and Tsuji, Hideakira, to Sankyo Company Limited. Insecticidal isoxazole derivatives. 3,759,941, Cl. 260-307.00h.

Sampson, Peter Steer, to Ronson Corporation. Lighter. 3,759,656, Cl. 431-142.000.

Samuel, John Raymond: *See—*
Robb, Derek John Mac Donald; and Samuel, John Raymond, 3,759,846.

Samuelson, Hans Olof; and Croon, Ingemar Liss-Albin, to Mo och Domsjo Aktiebolag. Process for bleaching cellulose pulp with alkali and oxygen gas utilizing waste bleaching liquor from an alkaline oxygen gas bleaching stage. 3,759,783, Cl. 162-40.000.

Sand, Leonard B.; and Sand, Michael L., to Zoechem Corporation. Synthetic zeolite. 3,760,062, Cl. 423-329.000.

Sand, Michael L.: *See—*
Sand, Leonard B.; and Sand, Michael L., 3,760,062.

Sand R Associates, Inc.: *See—*
Field, Gregory A., 3,758,922.

Sanders, Nellie M.: *See—*
Sanders, Victor M.; and Scotchie, Andrew A., 3,759,216.

Sanders, Victor M.; deceased (by Sanders, Nellie M.; executrix); and Scotchie, Andrew A., to Northrop Carolina, Inc. Smoke flare signalling and marking device. 3,759,216, Cl. 116-124.00b.

Sandison, Gillian M.: *See—*
Cavalla, John F.; Sandison, Gillian M.; and White, Alan C., 3,759,906.

Sandoz Ltd.: *See—*
Wicki, Heinz, 3,759,892.

Sandoz Ltd.; a/k/a Sandoz AG: *See—*
Jenny, Hanns; and Troesch, Juerg, 3,759,736.
Leber, Jean-Pierre, 3,760,039.

Sandoz-Wander, Inc.: *See—*
Houlihan, William J., 3,759,934.
Linder, Jerome; Mattner, Paul G.; and Salmond, William G., 3,759,920.

Sanko Kagaku Kogyo Kabushiki Kaisha: *See—*
Tanaka, Seizo, 3,759,444.

Sankyo Company Limited: *See—*
Sampei, Nobyoshi; Tomita, Kazuo; and Tsuji, Hideakira, 3,759,941.

Santilli, Arthur A.: *See—*
Kim, Dong H.; and Santilli, Arthur A., 3,759,922.

Sanyo Chemical Industries, Ltd.: *See—*
Nurina, Shogo; Hayashi, Yoshihiro; and Yamada, Kyohei, 3,759,985.

Saoyama, Yoshihito: *See—*
Nagano, Kentaro; and Saoyama, Yoshihito, 3,759,754.

Sarris, Samuel E.: *See—*
Ardito, Gerald J.; Newman, Jerome S.; and Sarris, Samuel E., 3,759,429.

Sasaki, Mamoru: *See—*
Watanabe, Kiyoshi; Tanaka, Tutomo; Hirakawa, Tamotsu; and Sasaki, Mamoru, 3,759,789.

Sasaki, Reiichi: *See—*
Furuhashi, Michio; Kitani, Teruo; and Sasaki, Reiichi, 3,760,095.

Sato, Koichi; Niki, Akira; Kitamura, Hiroshi; and Morimoto, Masanobu, to Asahi Kasei Kogyo Kabushiki Kaisha. Adhesive compositions from epoxide and ethylene vinyl acetate copolymer having unsaturated carboxylic acid grafted thereto. 3,760,031, Cl. 260-836.00.

Sato, Manabu, to Victor Company of Japan, Limited. Automatic tape running reversing apparatus for use in a tape recorder. 3,759,464, Cl. 242-188.000.

Savin Business Machines Corporation: *See—*
Shenier, Richard S., 3,760,276.

Savla, Manilal: *See—*
Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, 3,759,869.

Sawada, Hiroshi: *See—*
Yamada, Mitsumasa; and Sawada, Hiroshi, 3,759,668.

Sawafuji Denki Kabushiki Kaisha: *See—*
Shino, Goro; Okamoto, Katsuyuki; and Shimura, Katsumi, 3,759,237.

Sawai, Akira, to Nippon Electric Company Limited. Pulse regenerative repeater for a multilevel pulse communication system. 3,760,111, Cl. 179-16.00e.

Sax, Sylvan M.; Moore, John J.; and Bridgwater, Anna B. Method for determination of amylase activity. 3,759,794, Cl. 195-103.50r.

Saxby, Richard M., to Holley Carburetor Division. Positive crankcase ventilation air filter body. 3,759,015, Cl. 55-350.000.

Scalzo, Augustine J.; and McLaurin, Leroy D., to Westinghouse Electric Corporation. Self aligning combustor and transition structure for a gas turbine. 3,759,038, Cl. 60-39.320.

Scarbrough, Alfred D., to Bunker-Ramo Corporation. Batch fabricated magnetic wire memory. 3,760,389, Cl. 340-174.0ma.

Schaefer Corporation: *See—*
Kenyon, Andre J., 3,759,059.

Schaefer, Donald D.; and North, James R., Sr., to Dunham-Bush, Inc. Composite variable oil pressure relief and compressor unload valve assembly. 3,759,636, Cl. 417-281.000.

Schaer, Glenn R., to United States of America, Administrator of the National Aeronautics and Space Administration. Method of making porous conductive supports for electrodes. 3,759,747, Cl. 136-36.000.

Scheffler, Holger; Bannehr, Konrad; and Ziprian, Ingo, to VEB Wirkmaschinenbau. Control apparatus for the pattern drum of a knitting machine. 3,759,069, Cl. 66-50.00b.

Scherbatskoy, Serge A. Servo-programmed cable railway. 3,759,185, Cl. 104-112.000.

Schering A.G.: *See—*
Wieske, Reinhold; and Schulze, Paul-Eberhard, 3,759,961.

Schering Corporation: *See—*
Steinman, Martin, 3,760,007.

Schilter, Thomas, to Maschinenfabrik Schilter & Co. Automotive vehicle with front power take-off for power-driven implements. 3,759,340, Cl. 180-53.0fe.

Schindler, Hans, to Braun Aktiengesellschaft. Electromagnetic lighter with an apertured metal casing. 3,760,231, Cl. 317-92.000.

Schindler, Hans, to Braun Aktiengesellschaft. Permanent magnetic flux circuit and an actuating member for igniter. 3,760,313, Cl. 335-229.000.

Schinner, Thomas J.: *See—*
Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; Singer, Paul A.; and Zimmer, Ernest B., 3,760,160.

Schlaffer, Edward J.; and Wilder, Stevens E., to Caterpillar Tractor Company. Engine cooling system. 3,759,233, Cl. 123-41.100.

Schliesman, Leonard J., to Consolidated Papers, Inc. Electrostatic recording paper and method of making. 3,759,744, Cl. 117-218.000.

Schlinger, Warren G.: *See—*
Dille, Roger M.; and Schlinger, Warren G., 3,759,837.

Schlumberger Technology Corporation: *See—*
Schuster, Nick A., 3,760,260.

Schmerling, Louis, to Universal Oil Products Company. Alkylation of aromatic hydrocarbons. 3,760,022, Cl. 260-671.00r.

Schmidt, Edward W.: *See—*
Glass, Clifford A.; Kraft, Robert E.; and Schmidt, Edward W., 3,759,399.

Schmidt, Felix Helmut: *See—*
Stork, Harald; and Schmidt, Felix Helmut, 3,759,793.

Schmidt, Hans-Joachim: *See—*
Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,759,839.

Schmidt, Peter Jurgen: *See—*
Wahl, Josef; and Schmidt, Peter Jurgen, 3,759,232.

Schmitt, Bernhard: *See—*
Gaeth, Rudolf; Schmitt, Bernhard; and Blum, Dieter, 3,760,047.

Schmitt, Hugh A.; and Schmitt, Maxine F. Candle mold. 3,759,478, Cl. 249-93.000.

Schmitt, Maxine F.: *See—*
Schmitt, Hugh A.; and Schmitt, Maxine F., 3,759,478.

Schmitz, Lawrence S.; Lambright, John E.; and Lewis, Arthur M., to Westinghouse Electric Corporation. Audio waveform for digital recording. 3,760,388, Cl. 340-174.10h.

Schnegg, Robert; Pelousek, Herbert; and Dippelhofer, Robert, to Bayer Aktiengesellschaft. Polyester having improved stretchability and dyeability properties. 3,759,855, Cl. 260-22.00r.

Schneider, Jos., & Co. Optische Werke: *See—*
Hess, Karl-Gunter, 3,760,253.

Schnell, Hermann: *See—*
Emmer, Gerhard; Vernaleken, Hugo; Weirauch, Kurt; and Schnell, Hermann, 3,759,865.

Schnidberger, Hans-Peter, to Gebr. Hennig GmbH. Self-supporting articulated chain. 3,759,035, Cl. 59-78.100.

Schoenthaler, David, to Western Electric Company, Incorporated. Soldering apparatus having a non-uniform heat transfer distribution. 3,760,142, Cl. 219-85.000.

Scholl, Howard O., to American Air Filter Company, Inc. U-shaped fluid treating filter. 3,759,018, Cl. 55-487.000.

Schorre, Gustav; Nowak, Herbert; and Saiko, Otto, to Merck Patent Gesellschaft mit beschrankter Haftung. Certain 8-methyl-4-hydroxy-5-methylthiomethyl-4H-m dioxino [4,5-c]pyridines. 3,759,930, Cl. 260-294.80c.

Schrader, Gerhard: *See—*
Grewe, Ferdinand; Schrader, Gerhard; Kaspers, Helmut; and Meiser, Werner, 3,760,085.

Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo. N-Alkyl-phosphoro-amido-thioates. 3,760,044, Cl. 260-954.000.

Schrage, Frederick S., to United States of America, Army. Adjustable pivoting cradle for large caliber guns. 3,759,138, Cl. 89-37.00r.

Schraven, Eckhard: *See—*
Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,759,907.
Schreiber, Anthony J., to Standard Oil Company. Extrusion die with arched choke bar. 3,759,653, Cl. 425-461.000.
Schreiber, Hermann. Vehicle, in particular for training in the coordination of several controls. 3,759,537, Cl. 280-16.000.
Schreiner, Lester Dale; and Shindelar, John Joseph. Gear drive and support for corn harvesting unit. 3,759,021, Cl. 56-106.000.
Schrenk, Walter J.; Chisholm, Douglas S.; Cleereman, Kenneth J.; and Alfrey, Turner, Jr., to Dow Chemical Company, The. Apparatus for the preparation of multilayer plastic articles. 3,759,647, Cl. 425-131.000.
Schrimshaw, Rex A., to Honeywell Information Systems, Inc. Phase jitter special purpose computer. 3,760,167, Cl. 235-151.000.
Schroder, Walter. Drive for converters, rotary trommels, plate conveyors and the like. 3,759,116, Cl. 74-606.00r.
Schroer, Gary J., to Schroer Manufacturing Company, Inc. Caster and mounting structure. 3,758,917, Cl. 16-36.000.
Schroer Manufacturing Company, Inc.: *See—*
Schroer, Gary J., 3,758,917.
Schueler, Claus: *See—*
Loitzl, Rozica; and Schueler, Claus, 3,759,691.
Schull, Howard O.: *See—*
Tate, John E.; and Schull, Howard O., 3,759,393.
Schulman, Marvin; Pitchon, Esra; and Anderson, Charles D., to General Foods Corporation. Production of fish protein. 3,759,716, Cl. 99-18.000.
Schulze, Paul-Eberhard: *See—*
Wieske, Reinhold; and Schulze, Paul-Eberhard, 3,759,961.
Schuster, Nick A., to Schlumberger Technology Corporation. Method and apparatus for investigating earth formations by emitting survey and auxiliary currents from the same electrode. 3,760,260, Cl. 324-10.000.
Schwandt, Theodore F., to Minnesota Mining and Manufacturing Company. Method of intaglio printing on tacky sheet material. 3,759,176, Cl. 101-170.000.
Schwartz, Harold A.; and Port, Morton I., to Avisun Corporation, mesne. Process for producing a composite yarn which is bulky slip-resistant and of high strength. 3,760,046, Cl. 264-47.000.
Schwartz, Martin: *See—*
Rainey, Thomas Milton; and Schwartz, Martin, 3,759,330.
Schwarz, Frank, to Barnes Engineering Company. Intrusion detector. 3,760,399, Cl. 340-256.00d.
Schweezerische Industrie Gesellschaft: *See—*
Steiner, Daniel; and Blochlinger, Ernst, 3,759,567.
Schwind, Kurt C.: *See—*
Cushing, Charles J.; and Schwind, Kurt C., 3,759,620.
Science Union et Cie: *See—*
Beregi, Laszlo; Hugon, Pierre; and Le Douarec, Jean-Claude, 3,759,979.
Scientific Anglers, Inc.: *See—*
Martuch, Leon L.; and Russell, Edward J., 3,758,979.
Scotchie, Andrew A.: *See—*
Sanders, Victor M.; and Scotchie, Andrew A., 3,759,216.
Scott, Sam C. Multiple use concrete form liner. 3,759,481, Cl. 249-189.000.
Screen Printing Systems, Inc.: *See—*
Reinke, George W., 3,759,799.
Reinke, George W., 3,759,800.
Scrivo, Leonard; La Plante, Lionel J.; Chumenti, Vincent A.; and Rubin, Gotthard George, to Vicon Products Corporation. Dental fiber optic illumination system. 3,758,951, Cl. 32-27.000.
Seaberg, Richard D., to Pierce-Pacific Manufacturing, Inc. Grapple. 3,759,564, Cl. 294-88.000.
Sealfire: *See—*
Geffroy, Robert, 3,759,148.
Searle, G. D., & Co.: *See—*
Fox, Stewart A.; and Magill, Robert J., 3,759,107.
Marsheck, William J.; and Kraychy, Stephen, 3,759,791.
Searless, Stuart K.: *See—*
Pilloff, Herschel S.; Searless, Stuart K.; and Djeu, Nicholas I., 3,760,293.
Sears, Kay G.: *See—*
Ross, Joseph I.; and Sears, Kay G., 3,760,130.
Sebardt, Wilhelm: *See—*
Hasselgren, Borjf; and Sebardt, Wilhelm, 3,758,934.
Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Conductance-loaded transmission line resonator. 3,760,303, Cl. 333-73.00r.
Selin, Terry G.: *See—*
Berger, Abe; and Selin, Terry G., 3,759,968.
Selivanov, Anatoly Grigorievich; Makachev, Nikolai Ivanovich; and Parshina, Maria Kuzminichna. Warp tension device for looms. 3,759,299, Cl. 139-97.000.
Selzer, Eric Georg, to EXI Erzeugung von Sportbekleidung Gesellschaft m.b.H. Arrangement for connecting a ski pants leg to a ski boot. 3,758,890, Cl. 2-232.000.
Semiconductor Research Foundation: *See—*
Nishizawa, Jun-Ichi; and Takahashi, Kaoru, 3,760,201.
Serang, Abdulgafoor M.: *See—*
Rychlewski, Thaddeus V.; and Serang, Abdulgafoor M., 3,760,126.
Sevcon Engineering Limited: *See—*
Gorwicz, David; Battye, Edwin Amitage; and Wright, James, 3,760,246.
Shackleford, Ralph Edward: *See—*
Dalli, Alan George; Debenham, Michael; and Shackleford, Ralph Edward, 3,759,206.
Shank, Charles Vernon: *See—*
Kugelnik, Herwig Werner; and Shank, Charles Vernon, 3,760,292.
Shapiro, L. Dennis: *See—*
Galvin, Aaron A.; and Shapiro, L. Dennis, 3,760,400.
Sharabash, Moustafa M., to Lilly, Eli, and Company. Test method for film-forming materials. 3,759,089, Cl. 73-64.100.
Shaw, Robert H. Amphibious camper. 3,758,897, Cl. 9-1.00r.
Shay, Edward Griffin: *See—*
Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., 3,759,995.
Sheetz, David P.: *See—*
Exner, Jurgen H.; Sheetz, David P.; and Steiner, Edwin C., 3,760,005.
Shell Oil Company: *See—*
Aaron, Stuart W.; and Lemmers, Johannes W. F. M., 3,759,669.
Al, Jan J., 3,759,094.
Bauer, Ronald; Chung, Harold; Keim, Wilhelm; and Van Zwet, Henry, 3,759,889.
Beard, Thomas N., 3,759,574.
Collins, Leland F.; Quinn, Robert C.; and Wilhelmsen, Paul G., 3,759,836.
Dewhirst, Kenneth C., 3,759,838.
Doelman, Jan; and Van Meurs, Hubrecht C. A., 3,759,818.
Shell Oil Company shale: *See—*
Ueber, Russell C.; Meurs, Peter Van; and Brew, Jerke R., 3,759,328.
Shen, Tsung-Ying; Witzel, Bruce E.; Walford, Gordon L.; and Ruyle, William V., to Merck & Co., Inc. Non-steroid anti-inflammatory compounds. 3,759,948, Cl. 260-315.000.
Shenier, Richard S., to Savin Business Machines Corporation. Digital transmission system. 3,760,276, Cl. 325-38.00b.
Sheridan Products Inc.: *See—*
Heter, Elmo W., Jr., 3,759,428.
Shevyakov, Lev Nikolaevich: *See—*
Trofimov, Igor Dmitrievich; Korobeinikov, Jury Mikhailovich; Pavlov, Vadim Alexandro; and Shevyakov, Lev Nikolaevich, 3,759,034.
Shevyakova, Klavdia Andreevna: *See—*
Trofimov, Igor Dmitrievich; Korobeinikov, Jury Mikhailovich; Pavlov, Vadim Alexandro; and Shevyakov, Lev Nikolaevich, 3,759,034.
Shevyakova, Vera Stepanovna: *See—*
Trofimov, Igor Dmitrievich; Korobeinikov, Jury Mikhailovich; Pavlov, Vadim Alexandro; and Shevyakov, Lev Nikolaevich, 3,759,034.
Shibata, Keizo, to Tokyo Shibawa Electric Co., Ltd. Method for manufacturing semiconductor device. 3,758,943, Cl. 29-578.000.
Shibuya, Iku: *See—*
Shibuya, Moritada; and Shibuya, Iku, 3,758,912.
Shibuya, Moritada; and Shibuya, Iku. Ball cleaning device. 3,758,912, Cl. 15-302.000.
Shimanuki, Takashi; and Inoue, Yoshinori, to Kabushiki Kaisha Takenaka Komuten. Reversibly heat-recovering type heat pump through air heat source. 3,759,055, Cl. 62-160.000.
Shimizu, Shogo: *See—*
Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, 3,759,718.
Shimizu, Tetsuji; Iwakura, Makoto; and Tanaka, Hiroshi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Discharge lamp igniting circuit. 3,760,224, Cl. 315-94.000.
Shimokawa, Wataru. Polymer complex of a carboxy-containing polymer and a nonionic, cationic or amproteric surface. 3,759,861, Cl. 260-31.40r.
Shimomura, Takayoshi: *See—*
Matsudo, Kazuo; and Shimomura, Takayoshi, 3,759,081.
Shimujo, Takemi; and Yamaga, Makoto, to Alps Electric Co., Ltd. Matrix push-button switch. 3,760,137, Cl. 200-166.00c.
Shimura, Katsumi: *See—*
Shino, Goro; Okamoto, Katsuyuki; and Shimura, Katsumi, 3,759,237.
Shindelar, John Joseph: *See—*
Schreiner, Lester Dale; and Shindelar, John Joseph, 3,759,021.
Shino, Goro; Okamoto, Katsuyuki; and Shimura, Katsumi, to Sawafuji Denki Kabushiki Kaisha. Igniter for two-cycle multi-cylinder engine. 3,759,237, Cl. 123-148.00e.
Shinohara, Hiroshi: *See—*
Masunaga, Kunihiko; and Shinohara, Hiroshi, 3,759,797.
Shinto Kogyo Kabushiki Kaisha: *See—*
Nishi, Sunao; Ikeda, Shojiro; and Torii, Takayoshi, 3,759,724.
Shioda, Shigeru; Ogasahara, Fumio; and Otomo, Minoru, to Kayaba Kogyo Kabushiki Kaisha. Liquid pressure driving device. 3,759,042, Cl. 60-483.000.
Shionogi & Co., Ltd.: *See—*
Otsuka, Hideo; and Inouye, Ken, 3,759,891.
Shirasu, Hirotoshi: *See—*
Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, 3,760,364.
Shlesinger, Bernard Edward, Jr. Magnetically actuated reed switch assembly. 3,760,312, Cl. 335-205.000.

Shoemaker, John Robert: *See—*
Long, Robert Alvin; Over, William Roderick; Roberts, Lincoln Edwin; and Shoemaker, John Robert, 3,758,935.
Sholtes, George T., to General Electric Company. Quick-release support member attachment means. 3,759,471, Cl. 248-119.00r.
Short, James N., to Phillips Petroleum Company. Composite propellant containing atiridinyl curing agent. 3,759,764, Cl. 149-19.000.
Short, Ray L., Jr.; Bowen, Howard; and Henderson, David L., to Research Technology, Incorporated. Strip detection apparatus. 3,759,095, Cl. 73-157.000.
Showa Denka Kabushiki Kaisha: *See—*
Tanaka, Seizo, 3,759,444.
Shuffman, Oscar: *See—*
Ross, Sigmund L., 3,759,329.
Sick, Erwin, Firma: *See—*
Brose, Peter, 3,760,184.
Siddall, John B.; and Calame, Jean Pierre, to Zoecon Corporation. Dihalomethylene substituted esters and derivatives. 3,759,964, Cl. 260-408.000.
Sieber, Johannes Helmut: *See—*
Fuhring, Heinrich; and Sieber, Johannes Helmut, 3,759,071.
Sieffert, Joseph Edward, to Otis Elevator Company. Elevator system with temporary hoistway structor and method for use thereof. 3,759,349, Cl. 187-2.000.
Siemag Siegener Maschinenbau G.m.b.H.: *See—*
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Siemens Aktienegesellschaft: *See—*
Muller, Alfred, 3,759,750.
Siemens Aktiengesellschaft: *See—*
Bergt, Hans-Eberhard, 3,760,240.
Eschler, Hans, 3,759,603.
Grafe, Hans; and Ullrich, Hans, 3,759,798.
Guntersdorfer, Max, 3,760,203.
Posl, Rudolf; and Popp, Burkard, 3,760,251.
Rummel, Theodor, 3,759,670.
Weber, Ulrich, 3,760,180.
Signode Corporation: *See—*
Konger, Alfred P., 3,760,154.
Silman, Kenneth Edward: *See—*
Bligh, Jack; and Silman, Kenneth Edward, 3,759,446.
Silverberg, Morton, to Xerox Corporation. AC corotron. 3,760,229, Cl. 317-2.00f.
Simmons, Frank A., to Burgess Vibrocrafters, Inc. Grass clipper. 3,759,020, Cl. 56-17.500.
Simmons, Roger Cleary; Boyd, Horace Edward; and Kuchling, Peter Mathis, to Cooper Industries, Inc. Tool for applying and locking threaded fasteners. 3,758,938, Cl. 29-400.000.
Simms, John A.; and Tremper, Henry S., III, to Du Pont de Nemours, E. I., and Company. Curing compositions for epoxy resins comprising latent amine curing agent and accelerator. 3,759,914, Cl. 260-37.0ep.
Simon, Pierre: *See—*
Jeanmart, Claude; Messer, Mayer Naoum; and Simon, Pierre, 3,759,924.
Simon, Selwyn, to Union Carbide Corporation. Method for evacuating packages. 3,759,722, Cl. 99-174.000.
Simons, Frank A.: *See—*
Elliott, Herbert; and Simons, Frank A., 3,758,913.
Sinclair, Alex H.: *See—*
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargarder, Robert F., 3,759,586.
Sinclair-Koppers Company: *See—*
Immel, Richard H., 3,759,641.
Singer Company, The: *See—*
Current, Wayne A., 3,759,595.
Singer Company, The, mesne: *See—*
Ares, Roland A., 3,759,321.
Bullard, Russell H., 3,759,320.
Singer, Paul A.: *See—*
Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; Singer, Paul A.; and Zimmer, Ernest B., 3,760,160.
Sink, Larry W.: *See—*
Barrow, Robert B.; Smith, Matthew F.; and Sink, Larry W., 3,759,310.
Sipe, Nelson E.: *See—*
Werth, Elmer D.; Sipe, Nelson E.; and Carlson, Clarence J., 3,759,373.
Skaletzky, Louis L., to Upjohn Company, The. Method of treatment. 3,760,081, Cl. 424-273.000.
Skeen, Barton B.: *See—*
Smolinski, William H.; and Skeen, Barton B., 3,758,893.
Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, to Skeist Laboratories, Inc. Silane substituted polydienes. 3,759,869, Cl. 260-41.50r.
Skeist Laboratories, Inc.: *See—*
Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, 3,759,869.
Skerlos, Peter C., to Zenith Radio Corporation. Automatic fine tuning with phase-locked loop and synchronous detection. 3,760,094, Cl. 178-5.4sd.
Skoyles, Derek R., to U.S. Philips Corporation. Anti-lock brake systems. 3,759,585, Cl. 303-21.0af.
Slaasted, Raymond S.; and Dudley, Jack C., to Modine Manufacturing Company. Method of cooling a gas and removing moisture therefrom. 3,759,050, Cl. 62-93.000.
Slaven, John Greenwood. Fifth wheel coupler assembly. 3,759,546, Cl. 280-434.000.
Sloan, Joseph: *See—*
Csanady, Michael, Jr.; Sloan, Joseph; and Goldsborough, Cornelius S., Jr., 3,759,347.
Sloan, Thomas: *See—*
Castle, William Harold; Jacobs, Harry Michael; and Sloan, Thomas, 3,759,363.
Smaller, Philip. Direct contact transfer of long wavelength signals efficient. 3,760,123, Cl. 179-100.20e.
Smart, Horace Stanley, 1/2 to Mills, Reginald Richard. Injection molding apparatus. 3,759,315, Cl. 164-120.000.
Smith, Allen, to Reyrolle Parsons Limited. Centrifugal separators. 3,759,016, Cl. 55-452.000.
Smith, Frank K.: *See—*
Gadd, Ronald O. C.; and Smith, Frank K., 3,758,902.
Smith, Frank L.: *See—*
Wallace, Charles H.; and Smith, Frank L., 3,759,105.
Smith, Howard F., to Finck P int & Chemical Company. Corrosion-resisting wash primer composition and corrosion-protected metal surface. 3,759,751, Cl. 148-6.200.
Smith, Irwin M., to Kidde, Walter, & Company, Inc. Panel edge and seal structure. 3,759,005, Cl. 52-403.000.
Smith, James D. B.: *See—*
Mendelsohn, Morris A.; and Smith, James D. B., 3,759,734.
Rogers, Don A., Jr.; and Smith, James D. B., 3,759,866.
Smith Kline & French Laboratories, Limited: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,759,944.
Smith, Lawrence Edward, to RCA Corporation. Pincushion corrected vertical deflection circuit. 3,760,222, Cl. 315-27.0gd.
Smith, Leonard S.: *See—*
Bach, Stanley Monrad, Jr.; Smith, Leonard S.; and Holaday, Reed E., 3,760,271.
Smith, Matthew F.: *See—*
Barrow, Robert B.; Smith, Matthew F.; and Sink, Larry W., 3,759,310.
Smith, Ora E.: *See—*
Wilson, David G.; and Smith, Ora E., 3,759,085.
Smith, Wade O.; and Toft, Albert R., to United States of America, National Aeronautics and Space Administration. Star tracking reticles. 3,759,672, Cl. 29-195.00y.
Smith, William C., Jr. Method, apparatus and system for transporting, converting and unloading dry sugar. 3,759,279, Cl. 137-1.000.
Smith, William L.: *See—*
Ruthman, Jerome E.; Smith, William L.; and Forte, Robert A., 3,759,449.
Smith-Vaniz, William R.: *See—*
Lohne, William E.; Montgomery, John R.; Carley, Jay L.; Darling, Richard; and Smith-Vaniz, William R., 3,760,161.
Smiths Industries Limited: *See—*
Holter, Godfrey George, 3,760,162.
Smolinski, William H.; and Skeen, Barton B. Water saver toilet bowl flush system. 3,758,893, Cl. 4-67.00a.
Snyder, Marion F.; Lindquist, William C.; and Klemenhagen, Dale A., to Toro Manufacturing Corporation. Mower comb. 3,759,022, Cl. 56-252.000.
Sobey, Albert J.; McQueen, Norman; and Larsen, Robert R., to Transportation Technology, Inc., mesne. Vehicle body construction. 3,759,566, Cl. 296-28.00r.
Societa' Italiana Resine S.p.A.: *See—*
Calcagno, Benedetto; Piccolo, Luigi; and Ghirga, Marcello, 3,760,066.
Societa Italiana Telecommunicazioni S.p.A.: *See—*
Camiciottoli, Roberto; and Grossi, Giuseppe Telecommunicazioni, 3,760,127.
Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Monti, Giancarlo, 3,760,106.
Societe ALPIA: *See—*
Bruneau, Alain, 3,758,953.
Societe Anonyme Cribla: *See—*
Pouillon, Emile R. J., 3,759,385.
Societe Anonyme des Anciens Etablissements Paul Wurth: *See—*
Mahr, Rene, 3,759,404.
Societe Anonyme dite: Systemes et Procedes Industriels Modernes: *See—*
Mercadie, Claude; and Taussac, Pierre, 3,759,381.
Societe d'Etude du Transport et de la Valorisation des Gaz Naturels du Sahara S. E. G. A. N. S.: *See—*
Lamy, Jacques Edouard Jean, 3,758,940.
Societe d'Exploitation des Brevets NEIMAN: *See—*
Lipschutz, Paul, 3,759,075.
Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A.: *See—*
Vauille, Andre, 3,759,235.
Vuaille, Andre, 3,759,637.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Tournere, Marcel Joseph, 3,759,633.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Roudil, Maurice Jean Clement, 3,759,467.
Societe Nouvelle Baele Gangloff: *See—*
Pagay, Roger Francois Mathieu, 3,759,012.
Soehnges, Wilhelm P.: *See—*

Thiele, Heinrich; and Soehnges, Wilhelm P., 3,760,045.

Soletanche Societe Anonyme: *See—*
Caron, Claude; and Hurtado, Jean, 3,759,044.

Sollott, Gilbert P.; and Peterson, William R., Jr., to United States of America, Army. Silicon derivatives of ferrocene. 3,759,967, Cl. 260-439.0cy.

Solomon, Raymond, to Fairchild Camera and Instrument Corporation. Push-pull method for solution epitaxial growth of III-V compounds. 3,759,759, Cl. 148-171.000.

Sonab Development AB: *See—*
Goransson, Kjell; and Dahlgren, Jan-Ake, 3,760,301.

Sonia, John: *See—*
Wheeler, John B., III; Sonia, John; Hayes, Thomas E.; and Retrochko, Robert P., 3,760,055.

Sorokin, Peter P.: *See—*
Lankard, John R.; and Sorokin, Peter P., 3,760,295.

Sosaya, Dolores P.: *See—*
Sosaya, Frank F., 3,759,473.

Sosaya, Frank F.; deceased (by Sosaya, Dolores P.; executrix). Clamp for wall mounting of bathroom accessories. 3,759,473, Cl. 248-205.00r.

Soussan, Lyon: *See—*
Thomas, Jean Claude; Fournel, Francis; and Soussan, Lyon, 3,759,885.

Southwire Company: *See—*
Murphy, John H., 3,759,314.

Souza, Charles W.: *See—*
Dwyer, James L.; Paine, Richard A.; and Souza, Charles W., 3,759,773.

Spacelabs, Inc.: *See—*
Valiquette, Donley J., 3,759,248.

Spaite, Paul W., to Kinney, A. M., Inc. Refuse disposal and heat recovery in steam boilers. 3,759,196, Cl. 110-8.00r.

Spearhead, Inc.: *See—*
Hardway, Edward V., Jr., 3,760,254.

Spectra-Mat, Inc.: *See—*
Chonin, Ito J., 3,760,218.

Sperry, Charles R.: *See—*
Fenn, Lawrence E.; and Sperry, Charles R., 3,760,150.

Sperry Rand Corporation: *See—*
Brown, Ralph A., 3,759,475.
Nicolson, Alexander M., 3,760,414.
Warwick, James S., 3,760,233.

Spes, Hellmuth: *See—*
Kunstle, Gerhard; and Spes, Hellmuth, 3,759,988.

Spinner, Georg; and Pitschi, Frank. Dielectric support for high frequency coaxial lines. 3,760,306, Cl. 333-97.00r.

Sprague Electric Company: *See—*
Fabricius, John H.; and Maher, John P., 3,760,321.

Spransy, Brower C.; and Spransy, George Brower. Amusement and exercise device. 3,758,984, Cl. 46-220.000.

Spransy, George Brower: *See—*
Spransy, Brower C.; and Spransy, George Brower, 3,758,984.

Sprenger, Gerhard E.: *See—*
Caplick, Daniel J.; Marra, Frank; and Sprenger, Gerhard E., 3,759,809.

Spyropoulos, Chris E.: *See—*
Cox, Lyndon S.; and Spyropoulos, Chris E., 3,759,134.

Squibb, E. R., & Sons, Inc.: *See—*
Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., 3,759,903.
Yale, Harry Louis; and Petigara, Ramesh B., 3,759,923.

Srivastava, Keshava, to Honeywell Information Systems Inc. Technique for determining the extreme binary number from a set of binary numbers. 3,760,356, Cl. 340-146.30y.

Stachel, Adolf; deceased (by Stachel, Ingeburg Lydia Katharina; widow); Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, said Beyerle, Nitz and Schraven assors. to Cassella Farbwerke Mainkur Aktiengesellschaft. 3-Gamma-substituted aino-beta-alkoxybenzoxy-propyl) -6,7,8-alkoxy-1,2,3-benzotriazine-4(3H)-ones. 3,759,907, Cl. 260-248.0as.

Stachel, Ingeburg Lydia Katharina: *See—*
Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,759,907.

Staendeke, Horst, to Knapsack Aktiengesellschaft. Production of trialkylphosphines. 3,760,001, Cl. 260-606.50p.

Stahlberg, Eugene G.: *See—*
Janssen, Donovan M.; Kollar, Ernest P.; Stahlberg, Eugene G.; and Tiao, Shui-Li, 3,759,465.

Staib, Philippe G. Device for determining the energy of charged particles. 3,760,186, Cl. 250-305.000.

STAL Refrigeration AB: *See—*
Nilsson, Nils Edvin Folke; and Eurenius, Jimmie Arne, 3,759,061.

Stamicarbon N.V.: *See—*
Rang, Hendrik J.; and Kaarsemaker, Sjoerd, 3,759,887.

Standard Alliance Industries: *See—*
Desilets, Dennis W., 3,759,189.

Standard Oil Company: *See—*
Schreiber, Anthony J., 3,759,653.

Stanley, Thomas R.; and Mascia, Carmen T., to Continental Can Company, Inc. Dispensing valve assembly for pressurized container. 3,759,427, Cl. 222-402.200.

Stapp, Paul R., to Phillips Petroleum Company. Bis-tetrahydrofyranyl sulfones and sulfoxides. 3,759,956, Cl. 260-345.900.

Staubli Ltd.: *See—*
Kaufmann, Werner, 3,759,298.

Staudt, Heinrich; and Ritter, Ernst, to Bosch, Robert, G.m.b.H. Centrifugal governor for regulating the RPM of internal combustion engines. 3,759,236, Cl. 123-140.00r.

Stauffer Chemical Company: *See—*
Decker, Donald L., 3,759,776.
Fancher, Llewellyn W.; and Kalbeeld, Jules, 3,759,949.
Gutman, Arnold D., 3,760,040.
Gutman, Arnold D., 3,760,072.
Teach, Eugene G., 3,759,951.
Teach, Eugene G., 3,759,952.

Steege, Jan Hendrik Terter: *See—*
DeVos, Ferdinand Allard; and Steege, Jan Hendrik Terter, 3,760,098.

Steel, Margaret Lilian: *See—*
Cross, William Telford; Steel, Margaret Lilian; and Trueman, Stephen Edward, 3,759,439.

Steen, William John, to Morgan Refractories, Limited. Refractory articles for use with molten ferrous metals. 3,759,725, Cl. 106-44.000.

Stein, Alfred: *See—*
Helger, Roland; Hartel, Arnold; Stein, Alfred; and Baumer, Wilhelm, 3,759,374.

Stein, William B., to Warner & Swasey Company, The. Cutoff tool. 3,758,927, Cl. 29-96.000.

Steiner, Daniel; and Blochlinger, Ernst, to Schweezerische Industrie Gesellschaft. Vehicle with passenger seats. 3,759,567, Cl. 296-63.000.

Steiner, Edwin C.: *See—*
Exner, Jurgen H.; Sheetz, David P.; and Steiner, Edwin C., 3,760,005.

Steinfink, Murray: *See—*
Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, 3,759,869.

Steinke, Theodore D.: *See—*
Carter, Melvin A.; and Steinke, Theodore D., 3,759,635.

Steinman, Martin, to Schering Corporation. Bicyclic benzhydrylidene derivatives. 3,760,007, Cl. 260-619.00r.

Steinwand, Paul J., to Union Oil Company of California. Emulsion copolymerization. 3,759,859, Cl. 260-29.70t.

Stellmach, Dieter, to Walther Buromaschinen GmbH. Wire matrix printer heads. 3,759,359, Cl. 197-1.00r.

Stendel, Wilhelm: *See—*
Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 3,760,041.

Stepan, William E., to GTE Automatic Electric Laboratories, Incorporated. Mated connector apparatus for printed wiring boards. 3,760,329, Cl. 339-18.00c.

Stephens, Noel William Frank: *See—*
Rogers, Gordon Leonard; and Stephens, Noel William Frank, 3,759,618.

Stern, Robert L.: *See—*
DuRose, Arthur H.; and Stern, Robert L., 3,759,803.

Stevenson, George Michael: *See—*
Jones, Richard Sterling; and Stevenson, George Michael, 3,760,234.

Stich, Frederick A., to Allis-Chalmers Corporation. Capacitive position sensor. 3,760,392, Cl. 340-200.000.

Stidham, Melvin R.: *See—*
Heisler, Alan W., 3,758,985.

Stieglitz, Henry Gilbert: *See—*
Landauer, Le Roy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,759,810.

Stieler, Alfred Otto H., to Bunker-Ramo Corporation, The. Electric plug connection. 3,760,333, Cl. 339-91.00r.

Stier, Barrie J.; Ferrara, Peter J.; and Klobas, Ivan, said Ferrara assor. to said Catalano, Antoinette. Two-piece plug for rotational casting process for forming suction cup integral with the molded article. 3,759,480, Cl. 249-142.000.

Stiles, Thomas M.: *See—*
Evans, Rubert V.; Stiles, Thomas M.; and Ploeger, Kenneth C., 3,759,214.

Stockton Chemicals, Inc., mesne: *See—*
Rosen, William E.; and Berke, Philip A., 3,759,980.

Stolp, Fritz: *See—*
Freyschlag, Herwig; Stolp, Fritz; Reif, Werner; and Pommer, Horst, 3,760,004.

Stonehocker, Van Tassel: *See—*
Hinckley, John N.; and Stonehocker, Van Tassel, 3,759,640.

Storer, Christopher Charles: *See—*
Easton, Donald Bannerman James; Rennie, George Kerr; and Storer, Christopher Charles, 3,759,833.

Stork Amsterdam A.V.: *See—*
Adank, Johannes Antonius Marie, 3,759,366.

Stork, Harald; and Schmidt, Felix Helmut, to Boehringer Mannheim G.m.b.H. Process for the quantitative determination of tri-, di- and monoglycerides. 3,759,793, Cl. 195-103.50r.

Storrs, Bertrand L.; and Hoag, Eric J., to Du Pont de Nemours, E. I., and Company. Reformer catalyst. 3,759,678, Cl. 48-214.000.

Strachan & Henshaw Limited: *See—*
Alsop, Arthur Graham, 3,759,175.

Straitwell, Harold L., Jr. Board game apparatus. 3,759,520, Cl. 273-134.0ad.

Stratford Engineering Corporation: *See—*
Putney, David H.; Lindau, John H.; and West, Charles L., 3,759,318.

Strauss, Philip W.: *See—*
Bell, Clarence A.; Gwinn, Ralph; Jennison, Rolland N.; Jones, Bryon; and Strauss, Philip W., 3,759,049.

Strengholt, Roy: *See—*
Newman, Irvin; and Strengholt, Roy, 3,760,157.

Striebel, Kurt: *See—*
Rudle, August; and Striebel, Kurt, 3,759,226.

Stroot, Donald H.: *See—*
Barnes, Roy J.; and Stroot, Donald H., 3,759,561.

Stumph, Stephen L.: *See—*
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,760,159.

Sud-Chemie AG: *See—*
Fahn, Rudolf, 3,759,729.

Sugahara, Norio; and Oguri, Tomiji, to Kabushiki Kaisha Takai Rika Denki Seisakusho. Cold forcing method and apparatus for producing a terminal. 3,759,080, Cl. 72-356.000.

Sugalski, Raymond K.: *See—*
Voyentzie, Peter R.; Ziemba, Richard T.; and Sugalski, Raymond K., 3,759,749.

Sugayama, Sunichi: *See—*
Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.

Suggitt, Robert M.: *See—*
Arkell, Alfred; Crone, John M., Jr.; and Suggitt, Robert M., 3,760,017.

Suggitt, Robert M.; Arkell, Alfred; and Crone, John M., Jr., to Texaco Inc. Hydroalkylation catalyst and process. 3,760,018, Cl. 260-668.00f.

Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, to Riken Vitamin Oil Co., Ltd. Process for preparation of ikura (salmon egg). 3,759,718, Cl. 426-47.000.

Sugimoto, Minoru. Monorail railway transportation system. 3,759,186, Cl. 104-120.000.

Sugiura, Akio: *See—*
Ohta, Jun; Okamoto, Atsutoshi; and Sugiura, Akio, 3,759,582.

Suhonen, Tapani: *See—*
Levamaki, Reiji; Vehvilainen, Mikko; and Suhonen, Tapani, 3,759,182.

Sullivan, James D., to Monsanto Company. Functional fluid compositions. 3,759,829, Cl. 252-47.500.

Sullivan, James K.; and Howard, Richard I., to FMC Corporation. Briquetting calcining crushed mine run western phosphate shale ore. 3,760,048, Cl. 264-56.000.

Sullivan, Ronald D.: *See—*
Baldwin, Kenneth B.; and Sullivan, Ronald D., 3,760,324.

Sulzer Brothers Limited: *See—*
Pearrwaller, Erwin, 3,759,300.

Sumi, Shozo: *See—*
Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.

Sumitomo Chemical Co., Ltd.: *See—*
Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, 3,759,758.

Sumitomo Chemical Company, Ltd.: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.

Sun Chemical Corporation: *See—*
Caplick, Daniel J.; Marra, Frank; and Sprenger, Gerhard E., 3,759,809.
Himics, Richard J., 3,759,942.

Sun Oil Company of Pennsylvania: *See—*
Mills, Ivor W.; and Dimeler, Glenn R., 3,759,817.
Moore, Robert E., 3,760,020.

Sun Oil Company of Pennsylvania, mesne: *See—*
Hansel, William B., 3,759,423.

Sun Research and Development Co.: *See—*
Chong, Victor Manuel, 3,759,703.

Sunbeam Lighting: *See—*
Miller, Jack V., 3,760,178.

Sundberg, Bertil J.; and Luksch, Andreas, to Brunswick Corporation. Method of making metal fibril mats and reinforced metal fibril mats. 3,759,708, Cl. 75-208.00r.

Sunkist Growers, Inc.: *See—*
Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,759,168.
Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,859,168.

Superior Valve Company: *See—*
Kongelka, Robert M., 3,759,294.

Suzuki, Shigeto, to Chevron Research Company. Resorcinol process. 3,760,008, Cl. 260-621.00r.

Suzuki, Shigeto, to Chevron Research Company. Hydroquinone process. 3,760,009, Cl. 260-621.00r.

Svatek, Karl: *See—*
Moneagle, Otto F.; and Svatek, Karl, 3,759,456.

Swander, Kenneth D., Jr.: *See—*
Johnsson, Carl E.; and Swander, Kenneth D., Jr., 3,759,147.

Swaneck, Anthony J., Jr., to Westinghouse Electric Corporation. Air control for fresh food compartment quick chill operation. 3,759,053, Cl. 62-157.000.

Swanson, Harold V., to Interpace Corporation. Pipe to manhole seal. 3,759,280, Cl. 137-363.000.

Swemco Limited: *See—*
Flack, Bernard, 3,759,497.

Swick, George E., Jr., to Cornelius Company, The, mesne. Collapsible storage assembly. 3,759,599, Cl. 312-262.000.

Swift & Company: *See—*
Lewis, Morton, 3,760,038.

Swihart, Terence J.: *See—*
Groenhof, Eugene D.; and Swihart, Terence J., 3,759,827.

Swindell, E. LeRoy. Switchrack for electric motor starters and controls. 3,760,232, Cl. 317-99.000.

Sycor, Inc.: *See—*
Irwin, Samuel N.; and Levine, Michael R., 3,760,375.

Sykalo, Evgeny Petrovich: *See—*
Trandin, Georgy Gavrilovich; Khrichev, Vladimir Andreevich; Sykalo, Evgeny Petrovich; Burakov, Valery Petrovich; and Krasnobaev, Vasily Iliich, 3,759,166.

Sylvania Electric Products, Inc.: *See—*
Bonazoli, Robert P.; and Keenan, James P., 3,759,601.

Syrjanen, Ahti, to Yhtyneet Paperitehtaat Osakeyhtio Jylhavaara. Pressure straining device. 3,759,392, Cl. 210-415.000.

Szpakowski, Bronislaw Tadeusz, to Bell Canada-Northern Electric Research Limited. Trigger comparator circuit. 3,760,195, Cl. 307-235.000.

Szur, Elex J.: *See—*
Leeds, Morton W.; and Szur, Elex J., 3,760,086.

Szwolkon, Henry E. Fish hook and lure assembly. 3,758,976, Cl. 43-42.240.

Tachikawa Blind Kogyo Kabushiki Kaisha: *See—*
Tachikawa, Takeyoshi, 3,758,988.

Tachikawa, Takeyoshi, to Tachikawa Blind Kogyo Kabushiki Kaisha. Blind. 3,758,988, Cl. 49-85.000.

Taft Broadcasting Corporation, mesne: *See—*
Covington, Morris T., 3,760,280.

Taggart, Josh B. Alarm system. 3,760,397, Cl. 340-258.00b.

Tagh, Inc.: *See—*
Cooksley, Ralph D., 3,759,230.

Takachiho Koeki Kabushiki Kaisha: *See—*
Itoh, Takayuki, 3,760,382.

Takada, Shoichi: *See—*
Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.

Takahashi, Kaoru: *See—*
Nishizawa, Jun-Ichi; and Takahashi, Kaoru, 3,760,201.

Takai, Isao; and Ogura, Junshiro, to Oda Gosen Kogyo Kabushiki Kaisha and Ogura Hoseki Seiki Kogyo Kabushiki Kaisha. False twister device for producing crimps in filament yarn. 3,759,025, Cl. 57-77.300.

Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, to Onkyo Kabushiki Kaisha. Amplifier unit casing having recessed connector terminal surface. 3,760,235, Cl. 317-118.000.

Takano, Hirotugu; and Inoue, Toshitsugu, to Matsushita Electric Industrial Co., Ltd. Programming device. 3,760,163, Cl. 235-61.12n.

Takeda, Hideo, to Honda Giken Kogyo Kabushiki Kaisha. Support apparatus for a power unit in a motor vehicle. 3,759,341, Cl. 180-64.00r.

Takeda, Kunihiko: *See—*
Misumi, Teruyuki; Miyauchi, Hirotsugu; Tsushima, Sakae; Takeda, Kunihiko; and Miyaji, Toshio, 3,759,738.

Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Car washing apparatus. 3,758,906, Cl. 15-21.00e.

Takeuchi Tekko Kabushiki Kaisha: *See—*
Takeuchi, Shigeo, 3,758,906.

Tallon, Harry. Crane operated rotation monitor. 3,760,401, Cl. 340-267.00c.

Tamboise, Maurice Paul Jean Joseph, to Entripose. Metallic framework and floor resulting therefrom. 3,759,006, Cl. 52-406.000.

Tamura, Hideo: *See—*
Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, 3,759,718.

Tamura, Tatsuo: *See—*
Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.

Tanabe, Kuniyuki: *See—*
Kogo, Hiroshi; and Tanabe, Kuniyuki, 3,760,109.

Tanaka, Hiroshi: *See—*
Shimizu, Tetsuji; Iwakura, Makoto; and Tanaka, Hiroshi, 3,760,224.

Tanaka, Seizo, to Showa Denka Kabushiki Kaisha and Sanko Kagaku Kogyo Kabushiki Kaisha. Process and apparatus for the production of aerosols. 3,759,444, Cl. 239-138.000.

Tanaka, Tutomo: *See—*
Watanabe, Kiyoshi; Tanaka, Tutomo; Hirakawa, Tamotsu; and Sasaki, Mamoru, 3,759,789.

Tanigawa, Hironari: *See—*
Nakagawa, Akito; Ueda, Jenji; Tanigawa, Hironari; and Ishigoro, Keiichiro, 3,759,814.

Taniguchi, Kenji; Hayasaka, Akio; Masaki, Akira; Chiba, Tsuneyo; and Kaji, Tadao, to Hitachi, Ltd. Semiconductor integrated circuit. 3,760,200, Cl. 307-303.000.

Tanimura, Thoru: *See—*
Kunii, Kazuo; Nishida, Reijiro; Tanimura, Thoru; Kitamura, Masaji; and Okamoto, Shinya, 3,759,693.
Tanka, Keihachiro: *See—*
Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.
Tanner, Howard C., to International Business Machines Corporation. System for controlling output lines with limited storage capacity. 3,760,376, Cl. 340-172.500.
Tarr, Lloyd A.: *See—*
Beeman, Robert H.; and Tarr, Lloyd A., 3,760,269.
Tarrant, Donald R. Sequence identification apparatus. 3,758,971, Cl. 40-64.00r.
Tate, John E.; and Schull, Howard O., to American Air Filter Company, Inc. Fluid treating filter. 3,759,393, Cl. 210-491.000.
Taussac, Pierre: *See—*
Mercadie, Claude; and Taussac, Pierre, 3,759,381.
Taylor, Duane F. Tracheal cutting and dialating surgical device. 3,759,263, Cl. 128-305.000.
Taylor, Eric William. Spinal traction apparatus. 3,759,255, Cl. 128-75.000.
Taylor, George William: *See—*
Horenkamp, John Joseph; Meise, Henry August, Jr.; and Taylor, George William, 3,760,118.
Taylor, William W. Servomechanism. 3,759,145, Cl. 91-459.000.
Teach, Eugene G., to Stauffer Chemical Company. Carbanilate dithiolanes and dithianes. 3,759,951, Cl. 260-327.00m.
Teach, Eugene G., to Stauffer Chemical Company. Ureido dithiolanes and dithianes. 3,759,952, Cl. 260-327.00m.
Teikoku Hormone Mfg. Co., Ltd.: *See—*
Osawa, Yoshio; and Ueno, Koitiro, 3,759,946.
Tektronix, Inc.: *See—*
Kong, Victor, 3,760,099.
Lockwood, Larry R., 3,760,283.
Tektronix, Inc., mesne: *See—*
Cochran, Michael D., 3,760,370.
Telesco Brophey Limited: *See—*
Hoffman, Hans, 3,759,278.
Teletype Corporation: *See—*
Fausel, Charles A.; and Lorenz, Allan C., 3,758,949.
Teller, Aaron J., to Teller Environmental Systems, Inc. Process for cooling liquids by cross current contact with gases. 3,759,496, Cl. 261-94.000.
Teller Environmental Systems, Inc.: *See—*
Teller, Aaron J., 3,759,496.
Teplitz, Alfred, to United States Steel Corporation. Apparatus for measuring lengths of linear material. 3,758,954, Cl. 33-141.00f.
Terai, Kiyoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Apparatus for assembling curved skin block frames of a hull and a method therefor. 3,759,207, Cl. 114-65.00r.
Terry, John Brian, to Marconi Company Limited, The. P.C.M. coders. 3,760,407, Cl. 340-347.0nt.
Tetrachord Corporation: *See—*
Gacek, Joseph A.; and Parker, Joseph E., 3,760,108.
Tetsuji, Yoshii, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus. 3,759,529, Cl. 274-4.00c.
Texaco Inc.: *See—*
Arkell, Alfred; Crone, John M., Jr.; and Suggitt, Robert M., 3,760,017.
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., 3,759,326.
Crone, John M., Jr.; and Arkell, Alfred, 3,760,019.
Dille, Roger M.; and Schlinger, Warren G., 3,759,837.
Francis, James O., 3,760,028.
Franz, William F.; and Hess, Howard V., 3,759,679.
Harrison, Henry R., 3,759,828.
Holder, Charles B., 3,759,881.
Larkin, John M., 3,760,012.
Suggitt, Robert M.; Arkell, Alfred; and Crone, John M., Jr., 3,760,018.
Treybig, James Alva, 3,760,347.
Texas Instruments, Incorporated: *See—*
Marcoux, Leo, 3,760,352.
Thaler, Sherwood S.; and Berkovits, Barough V., to American Optical Corporation. Pulse-width controlled heartbeat stimulating apparatus monitoring system. 3,759,265, Cl. 128-419.00p.
Tharman, Paul A., to Briggs & Stratton Corporation. Rectifier-regulator module for alternator-battery electrical systems. 3,760,259, Cl. 322-28.000.
Thelen, Alfred, to Balzers Patent- und Bateiligungs-Aktiengesellschaft. Interference filter reflecting a certain wave length band within a given wave length range while letting pass other wave length bands of the range. 3,759,604, Cl. 350-166.000.
Theodore, Paris. Grips for handguns. 3,758,978, Cl. 42-71.00p.
Thermoseal Glass Corporation: *See—*
Newman, Irvin; and Strengholt, Roy, 3,760,157.
Theurer, Josef, to Plasser, Franz, Bahnbaumaschinen Industriegesellschaft m.b.H. Impact socket wrench tool. 3,759,334, Cl. 173-22.000.
Thiele, Heinrich: *See—*
Thiele, Heinrich; and Soehnges, Wilhelm P. (said Soehnges assor. to said), 3,760,045.
Thiele, Heinrich; and Soehnges, Wilhelm P., said Soehnges assor. to said Thiele, Heinrich. Process of preparing shaped optical bodies useful as aids to vision. 3,760,045, Cl. 264-1.000.
Thiele, Robert E., to United States Steel Corporation. Panel joint assembly with drainage cavity. 3,759,007, Cl. 52-533.000.
Thiokol Chemical Corporation: *See—*
Williams, Allan E., 3,759,039.
Thomas, Hermann, to Maschinenfabrik Goebel G.m.b.H. Winding machine. 3,759,458, Cl. 242-67.10r.
Thomas, Jean Claude; Fournel, Francis; and Soussan, Lyon, to Produits Chimiques Pechiney-Saint-Gobain. Vinyl chloride polymers and methods of preparing them. 3,759,885, Cl. 260-92.80r.
Thomas, John, to American Air Filter Company, Inc. Damper seal system. 3,759,486, Cl. 251-330.000.
Thomas, Stephen Edward. Apparatus and process for developing electromagnetic energy from tire flexure. 3,760,351, Cl. 340-58.000.
Thomason, Gary. Filtering system for deep fat cooking vessel. 3,759,388, Cl. 210-167.000.
Thompson, Charles R.; and Hidalgo, John, to Cutter Laboratories, Inc. Injectable compositions of the (plus)-optical insomer of the alpha racemate of 2-(2-ethyl-2-phenyl-1,-dioxolan-4-yl) piperidine and their use. 3,760,077, Cl. 424-267.000.
Thompson, David R., to Rental Equipment Manufacturing Co. Yard maintenance apparatus. 3,758,967, Cl. 37-43.00e.
Thompson, George H. B., to International Standard Electric Corporation. Laser to optical fiber coupling. 3,760,297, Cl. 331-94.500.
Thompson, I. L.: *See—*
Vocker, Harold R.; Marcovitz, David L.; Thompson, I. L.; and Wallace, Woodrow, 3,759,171.
Thompson, Joseph; Hemming, Raymond Charles; Critchley, John Edward; and Morrell, Ronald Joseph, to Northern Electric Company Limited. Post pay telephone paystation circuit. 3,760,104, Cl. 179-6.30r.
Thomson-CSF: *See—*
Narbaits-Jaureguy, Jean Raymond; and Billottet, Henri, 3,760,278.
Thone-Poulenc S.A.: *See—*
Monier, Paulin, 3,759,936.
Thornton, George W.: *See—*
Rose, Boyd W.; and Thornton, George W., 3,759,368.
Thornton, Raymond E., to Brown & Williamson Tobacco Corporation. Smoking articles. 3,759,267, Cl. 131-8.00r.
Thorpe, Richard S.: *See—*
Lubowitz, Hyman R.; Thorpe, Richard S.; and Vaughan, Robert W., 3,759,777.
Tiao, Shui-Li: *See—*
Janssen, Donovan M.; Kollar, Ernest P.; Stahlberg, Eugene G.; and Tiao, Shui-Li, 3,759,465.
Tiley, John Wayne, to AMP Incorporated. Method of and system for threading glass connectors and connector. 3,759,682, Cl. 65-109.000.
Timber Research and Development Association: *See—*
Ollis, William John Bernard; Long, Clive Beech Ansley; and Levin, Ezra, 3,758,998.
Timesavers, Inc.: *See—*
Brotherton, Cecil O., 3,759,146.
Tims, Allan C.: *See—*
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Tischuk, Walter: *See—*
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Tiskovich, Natalya Lvovna: *See—*
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Titarenko, Alexandr Timofeevich: *See—*
Polshikov, Ivan Vasilievich; Kuruin, Lev Nikolaevich; and Titarenko, Alexandr Timofeevich, 3,759,112.
Toft, Albert R.: *See—*
Smith, Wade O.; and Toft, Albert R., 3,759,672.
Tokunaga, Kazumi. Molds for use in manufacturing energy dissipating concrete blocks for river and marine works. 3,759,043, Cl. 61-4.000.
Tokuzumi, Tadaichi; Fujimura, Hiroshi; and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd. Process for the polymerisation or copolymerisation of ethylene with the use of a catalyst supported by a carrier. 3,759,884, Cl. 260-88.20r.
Tokyo Shibaura Electric Co.: *See—*
Ohnishi, Hiroshi, 3,759,051.
Tokyo Shibawa Electric Co., Ltd.: *See—*
Shibata, Keizo, 3,758,943.
Tollinger, James, to Ithaca Gun Company. Semi-automatic shotgun. 3,759,135, Cl. 89-33.00b.
Tolliver, Donald L.: *See—*
Barone, Frank J.; and Tolliver, Donald L., 3,759,762.
Tomasovitch, Vladimir: *See—*
Bouchet, Claude; Meliani, Roger; and Tomasovitch, Vladimir, 3,760,113.
Tomita, Akira: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,759,849.
Tomita, Kazuo: *See—*
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Tongas, Robert J.: *See—*

Luedke, Donald M.; and Tongas, Robert J., 3,759,337.
Toplis, John Geoffrey, to Raleigh Industries Limited. Cycle brake having brake adjusting mechanism. 3,759,352, Cl. 188-24.000.
Torii, Takayoshi: *See—*
Nishi, Sunao; Ikeda, Shojiro; and Torii, Takayoshi, 3,759,724.
Toro Company, The: *See—*
Comer, Robert C., 3,759,023.
Toro Manufacturing Corporation: *See—*
Snyder, Marion F.; Lindquist, William C.; and Klemenhagen, Dale A., 3,759,022.
Tournere, Marcel Joseph, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device for locking blades or other slidingly mounted parts in position on a rotor or other rotating support means. 3,759,633, Cl. 416-220.000.
Towne, Paula: *See—*
Hlasnicek, Richard S.; and Towne, Paula, 3,758,981.
Toyo Boseki Kabushiki Kaisha: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,759,849.
Toyo Kogyo Company, Limited: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Masunaga, Kunihiko; and Shinohara, Hiroshi, 3,759,797.
Ohta, Jun; Okamoto, Atsutoshi; and Sugiura, Akio, 3,759,582.
Yamada, Mitsumasa; and Sawada, Hiroshi, 3,759,668.
Trahan, Albert J., to Emhart Corporation. Neck ring arms for glassware forming machine. 3,759,686, Cl. 65-167.000.
Trandin, Georgy Gavrilovich; Khrichev, Vladimir Andreevich; Sykalo, Evgeny Petrovich; Burakov, Valery Petrovich; and Krasnobaev, Vasily Iliich; deceased (by Krasnobaev, Anna Nikolaevn; administrator). Apparatus for peeling fruits and vegetables. 3,759,166,Cl. 99-472.000.
Transco Inc.: *See—*
Husz, Charles, 3,759,008.
Transportation Technology, Inc., mesne: *See—*
Sobey, Albert J.; McQueen, Norman; and Larsen, Robert R., 3,759,566.
Trecker, David John: *See—*
Osborn, Claiborn Lee; and Trecker, David John, 3,759,807.
Treherne, Elizabeth Joan: *See—*
Brown, David Sydney; Ficken, Geoffrey Ernest; and Treherne, Elizabeth Joan, 3,759,931.
Treiber, Hans-Joerg; and Zimmermann, Frank, to Knoll A.G. Chemische Fabriken. Substituted 4-cyano-4-phenylaminocyclohexanes. 3,759,974, Cl. 260-465.00e.
Tremper, Henry S., III: *See—*
Simms, John A.; and Tremper, Henry S., III, 3,759,914.
Treybig, James Alva, to Texaco Inc. High resolution reflection shooting. 3,760,347, Cl. 340-15.5mc.
Trico Products Corporation: *See—*
D'Alea, Anthony R., 3,759,290.
Trief, Leon-Jules. Process for utilizing coal residues. 3,759,730, Cl. 106-103.000.
Triner, Irvin Richard: *See—*
Kehl, Lawrence Joseph; Triner, Irvin Richard; and Janis, Robert Gerald, 3,760,156.
Triumph Werke Nuernberg A.G.: *See—*
Link, Manfred, 3,759,361.
Troesch, Juerg: *See—*
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Trofimov, Igor Dmitrievich; Korobeinikov, Jury Mikhailovich; Pavlov, Vadim Alexandro; and Shevyakov, Lev Nikolaevich; deceased (by Shevyakova, Vera Stepanovna; Tiskovich, Natalya Lvovna; and Shevyakova, Klavdia Andreevna; administrators). Device to form chin links of various shapes from round wire. 3,759,034, Cl. 59-27.000.
Trop, Lawrence B. Light machine. 3,760,176, Cl. 240-10.100.
Troster, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius and Bruning. Benzoxanthene and benzothioxanthene. 3,759,953, Cl. 260-328.000.
Trouilhet, Maurice Marie Achille, to Calor. Single-phase motor with auxiliary coils selectively short-circuited by a solid state switch element. 3,760,247, Cl. 318-223.000.
Tru-Lok Metal Fabricating Company, Inc.: *See—*
Massagli, Daniel; and Massagli, Marino Ralph, 3,759,646.
Trueman, Stephen Edward: *See—*
Cross, William Telford; Steel, Margaret Lilian; and Trueman, Stephen Edward, 3,759,439.
Truhan, Andrew. Medicator with frangible seal. 3,759,259, Cl. 128-269.000.
TRW Inc.: *See—*
Leonard, Paul L., 3,760,288.
Lubowitz, Hyman R.; Thorpe, Richard S.; and Vaughan, Robert W., 3,759,777.
Meyers, Robert A.; and Burns, Eugene A., 3,759,868.
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Tsuruishi, Yuki, to Kabushiki Kaisha Suwa Seikosha. Electronic watch. 3,759,028, Cl. 58-28.00a.
Tsushima, Sakae: *See—*
Misumi, Teruyuki; Miyauchi, Hirotsugu; Tsushima, Sakae; Takeda, Kunihiko; and Miyaji, Toshio, 3,759,738.
Tuman, Edwin: *See—*
Ocasio, Gerardo; and Tuman, Edwin, 3,760,266.
Turk, Stanley D.: *See—*
Reusser, Robert E.; and Turk, Stanley D., 3,760,026.
Turner, Nathan L., to Petro-Tex Chemical Corporation. Biodegradable emulsifiers for polychloroprene. 3,759,886, Cl. 260-92.300.
Turner, Robert K.: *See—*
Blanchard, Clarence E.; Turner, Robert K.; and DuBois, Chester, 3,759,493.
Tveten, Kjell Wallin: *See—*
Blaker, Ivar; Boyum, Oystein; Andreassen, Knut Anton; Lunde, Reidar Skipperud; and Tveten, Kjell Wallin, 3,760,050.
Twist, Walter; Holdsbrough, Keith; and Hinley, John James, to British Titan Limited. Process for the manufacture of a pigment. 3,759,732, Cl. 106-300.000.
Tyler, Claude T., to Tyler Machinery Co., Inc. Multiple-section molding press. 3,759,649, Cl. 425-145.000.
Tyler Machinery Co., Inc.: *See—*
Tyler, Claude T., 3,759,649.
Tyllinen, Yrjo: *See—*
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Tyrey, Elasco A. Apparatus for beating a water bed. 3,760,147, Cl. 219-217.000.
U. C. B., Societe Anonyme: *See—*
Zivkovic, Dusan, 3,759,928.
U-Cart Concrete Systems Inc.: *See—*
Hall, Jack F., 3,759,492.
Uchida, Kozo, to Iwatsu Electric Co., Ltd. Protecting circuit. 3,760,228, Cl. 317-31.000.
Uchiike, Hisayuki: *See—*
Mori, Hiroshi; Wakasa, Yutaka; and Uchiike, Hisayuki, 3,760,198.
Uchiyama, Yasuji: *See—*
Isii, Sigeki; and Uchiyama, Yasuji, 3,760,358.
Ueber, Russell C.; Meurs, Peter Van; and Brew, Jerke R., to Shell Oil Company shale. Laterally expanding oil shale permeabilization. 3,759,328, Cl. 166-303.000.
Ueda, Jenji: *See—*
Nakagawa, Akito; Ueda, Jenji; Tanigawa, Hironari; and Ishigoro, Keiichiro, 3,759,814.
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Ueno, Koitiro: *See—*
Osawa, Yoshio; and Ueno, Koitiro, 3,759,946.
Ueno, Ryuzo; Watanabe, Shota; and Ota, Sotoyuki, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo. Method for protecting chickens and hogs from pasteurella. 3,760,079, Cl. 424-272.000.
Uhlig, Albert R., to Ownes-Illinois, Inc. Pressure resistant plastic container. 3,759,410, Cl. 215-1.00c.
Ullrich, Hans: *See—*
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Ungerer, Irma: *See—*
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Union Carbide Canada Limited: *See—*
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Downing, James H., 3,759,695.
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Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,759,876.
Osborn, Claiborn Lee; and Trecker, David John, 3,759,807.
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Wheeler, John B., III; Sonia, John; Hayes, Thomas E.; and Retrochko, Robert P., 3,760,055.
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Attane, Edward C.; Mears, David E.; and Reeg, Cloyd P., 3,759,819.
Folkins, Hillis O., 3,759,822.
Oliver, Robert K.; and Ford, George L., 3,759,795.
Steinwand, Paul J., 3,759,859.
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Hageman, Howard A.; Gevirtz, Arthur H.; and von Schmeling, Bogislav, 3,759,689.
Nudenberg, Walter; and Delaney, Edward A., 3,759,882.
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United Aircraft Corporation: *See—*
Barrow, Robert B.; Smith, Matthew F.; and Sink, Larry W., 3,759,310.
Quenneville, Raymond N., 3,759,358.
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Rybicki, Robert C., 3,759,632.
United Electric Controls Company: *See—*
Reis, Robert D., 3,760,138.
United Kingdom of Great Britain and Northern Ireland, Minister of Aviation in Her Britannic Majesty's Government of the: *See—*
Young, George Harold Sidney, 3,759,765.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Bligh, Jack; and Silman, Kenneth Edward, 3,759,446.
United Nuclear Corporation: *See—*
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United States of America
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Blajda, Raymond S.; and Rubin, Kenneth D., 3,759,184.
Bradford, Alan P.; and Reed, Lee R., 3,759,221.
Cash, Carlton H.; Green Hazel; and Jernigan, James J., 3,760,418.
Chovanec, John J.; and Hildebrant, Floyd J., 3,760,262.
Cohn, Seymour B., 3,760,304.
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Cox, Lyndon S.; and Spyropoulos, Chris E., 3,759,134.
Daly, Patrick J.; Grogg, William E.; Layman, Stuart F.; Orlando, Harold J.; Perry, James E.; and Van Derlaske, Dennis P., 3,760,181.
DeSantis, Charles M.; and Gottfried, Arthur H., 3,760,219.
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Evers-Euterneck, Ernst T., 3,759,466.
Gibson, Steve B.; Lyttle, William B.; and Repasy, Andy J., 3,760,175.
Grandy, Andrew J., 3,759,137.
Jasper, Louis J., Jr., 3,760,223.
Kaldenback, Kenneth H.; Kovals, John; and Pollard, John H., 3,759,282.
Lasser, Howard G.; and Almaula, Bipin C., 3,760,216.
Mellen, George P., 3,759,181.
Nimylowycz, Csyp, 3,759,469.
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargarder, Robert F., 3,759,586.
Ragsdale, Charles W.; and Wright, Edward A., 3,760,100.
Rast, Gustaf J., Jr.; and Barley, Thomas A., 3,760,256.
Roberts, Thomas G.; Hutcheson, Guilford J.; and Rust, Charles M., 3,760,294.
Schrage, Frederick S., 3,759,138.
Sollott, Gilbert P.; and Peterson, William R., Jr., 3,759,967.
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Keich, John D.; and Laliberte, George A., 3,759,562.
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Nola, Frank J.; Currie, James R.; and Reid, Harry, Jr., 3,760,248.
Ruhnke, Lothar H., 3,760,268.
Smith, Wade O.; and Toft, Albert R., 3,759,672.
National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Bailey, Robert L. Electromagnetic wave energy converter. 3,760,257, Cl. 321-1.500.
Freggens, Robert Alfred. Thermal flux transfer system. 3,759,443, Cl. 239-127.100.
Hanna, Michael F. Event sequence detector. 3,760,394, Cl. 340-223.000.
Hruby, Ronald J.; Cress, Steven B.; and Dunn, William R. Coaxial inverted geometry transistor having buried emitter. 3,760,239, Cl. 317-235.00r.
Liu, Frederick F. Respiratory analysis system and method. 3,759,249, Cl. 128-2.080.
Wojtasinski, Ronald J. Automatic lightning detection and photographic system. 3,759,152, Cl. 95-11.000.
Navy: *See—*
Britt, A. D., 3,759,970.
Fishel, Kenneth R., 3,759,092.
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Hughes, William J., 3,760,345.
Kieser, Robert J.; Bass, John R.; and Donovan, John E., 3,760,346.
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Mravic, Brian; and Porter, Lew F., 3,759,706.
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King, Cary Judson, III; Kumar, Romesh; and Lynn, Scott, 3,759,047.
University of Southern California: *See—*
Backus, John G., 3,759,132.
Unruh, Cecil. Cover for truck beds. 3,759,568, Cl. 296-98.000.
Upjohn Company, The: *See—*
Beal, Philip F., III; and Pike, John E., 3,759,965.
Hester, Jackson B., Jr., 3,759,943.
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Walkley, James A.; Piotroski, Peter N.; and O'Gara, George W., to Pitney-Bowes, Inc. Method, apparatus and system for fitness sorting and count verifying straps of currency. 3,759,382, Cl. 209-111.700.
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Weber, Karl Heinz; Zeile, Karl; Dannesberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz; deceased (by Hauptmann, Maria; heir), to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing a 5-phenyl-7-bromo -1H-1,5-benzodiazepinel-2,4-(3H,5H)dione. 3,760,074, Cl. 424-244.000.
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Widiger, Alexander H., Jr., to Dow Chemical Company, The. Purification of 2,4,5-trichlorophenol. 3,760,010, Cl. 260-623.00r.
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Wilson, John C. Pinned joint. 3,759,003, Cl. 52-285.000.
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Wolf, Charles B.; Fey, Maurice G.; and Azinger, Frederick A., Jr., to Westinghouse Electric Corporation. Arc detecting material admission apparatus for use in combination with an electric arc heater. 3,760,151, Cl. 219-383.000.

Wolf, Edgar; Lau, Edward; and Eisenkramer, Arthur, to Redactron Corporation. Data card transport and scanning apparatus. 3,760,391, Cl. 340-174.10c.

Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., to General Electric Company. Storage system with collimated electron beam for minimal spherical aberration. 3,760,383, Cl. 340-173.0cr.

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Wrenn, George T.; and Mann, H. William, to Virginia Chemicals Inc. Receiver drier housing for automobile air conditioning systems. 3,759,062, Cl. 62-474.000.

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Yamaguchi, Goru; Komatsu, Susumu; and Fukumoto, Tetsuo. Catalyst for catalytic cracking of hydrocarbons. 3,759,844, Cl. 252-465.000.

Yamaguchi, Kazuo; Hasuo, Masayoshi; and Ito, Isao, to Mitsubishi Chimical Industries, Ltd. Process for preparing ethylene copolymer. 3,759,918, Cl. 260-80.700.

Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, to Toyo Boseki Kabushiki Kaisha. Cross-linked acrylic fibers or films prepared by copolymerizing acrylonitrile, unsaturated monomer containing halogented S-triazinyl groups, and protein. 3,759,849, Cl. 260-8.000.

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, to Sumitomo Chemical Company, Ltd. Certain 1-oxamoyl-1,4-benzodiazepines. 3,759,897, Cl. 20-239.0bd.

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Yamazaki, Eiichi; and Kanai, Hiromi, to Hitachi, Ltd. Shadow masks for use in colour picture tubes. 3,760,214, Cl. 313-85.00s.

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Youhanaian, Lawrence A., to Littelfuse, Inc. Audio signalling device. 3,760,411, Cl. 340-388.000.

Young, Gar. Food packaging system and temperature-resistant insert thereof. 3,759,720, Cl. 99-171.00h.

Young, Gar, to Ralston Purina Company. Method of heating a packaged foodstuff in a toaster. 3,759,721, Cl. 99-171.00h.

Young, George Harold Sidney, to United Kingdom of Great Britain and Northern Ireland, Minister of Aviation in Her Britannic Majesty's Government of the. Gas-producing compositions. 3,759,765, Cl. 149-19.910.

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LIST OF REISSUE PATENTEES

TO WHOM

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Leimert, John. Method and apparatus for sealing film with high frequency electrical energy using a tapered edge sealing jaw. Re. 27,759, 9–18–73, Cl. 156—278.

Mayo, George L., by Clary Corp. Door finishing machine. Re. 27,760, 9–18–73, Cl. 144—8.

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Ballets, Peter. Toy spinning top. 228,397, 9–18–73, Cl. D34—15.

Barriti, John B., Jr. Fishing lure. 228,391, 9–18–73, D26—29.

Bellini, Mario, to Olivetti, Ing. C., & Co., S.p.A. Desk-top calculator. 228,387, 9–18–73, Cl. D26—5.

Bettonica, Franco, to Periler S.p.A. Compac eye-liner container. 228,419, 9–18–73, Cl. D86—10.

Blackall, Frederick S. Traversing hanger for personnel sling. 228,415, 9–18–73, Cl. D71—1.

Blankenship, Arthur C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 228,421, 9–18–73, Cl. D90—20.

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Meszaros, Albert. Flower pot. 228,402, 9–18–73, Cl. D35—3.

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Novak, Stanley M., Jr., to AMF Inc. Juvenile riding vehicle. 228,400, 9–18–73, Cl. D34—15.
Ogilvie, Kenneth Alan, to Walker Crosweller & Co., Ltd. Plumbing fitting. 228,385, 9–18–73, Cl. D23—40.
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130E 3,758,973
322 3,758,974

CLASS 42
71P 3,758,978

CLASS 43
1R 3,759,673
7C 3,759,674
38 3,759,675

CLASS 46
43 3,758,981
74D 3,758,985
119 3,758,982
135A 3,758,983
220 3,758,984

CLASS 47
38 3,758,986
38.1 3,758,987

CLASS 48
206 3,759,676
209 3,759,677
213 3,759,679
214 3,759,678

CLASS 49
85 3,758,988
120 3,758,989
153 3,758,990
257 3,758,991
489 3,758,992

CLASS 51
80BS 3,758,993
241S 3,758,994

CLASS 52
8 3,758,995
60 Re.27,761
79 3,758,998
97 3,758,997
103 3,758,999
172 3,758,996
179 3,759,000
241 3,759,001
270 3,759,002
285 3,759,003
400 3,759,004
403 3,759,005
406 3,759,006
533 3,759,007
573 3,759,008
598 3,759,009

CLASS 53
24 3,759,010
184 3,759,011
306 3,759,012
329 3,759,013

CLASS 55
96 3,759,014
350 3,759,015
452 3,759,016
481 3,759,017
487 3,759,018

CLASS 56
10.5 3,759,019
17.5 3,759,020
106 3,759,021
252 3,759,022
320.1 3,759,023

CLASS 57
34HS 3,759,024
77.3 3,759,025
80 3,759,026
140BY 3,759,027

CLASS 58
28A 3,759,028
38 3,759,029
50R 3,759,030
3,759,031
55 3,759,032
74 3,759,033

CLASS 59
27 3,759,034
78.1 3,759,035

CLASS 60
39.05 3,759,036
39.14 3,759,037
39.32 3,759,038
231 3,759,039
305 3,759,040
310 3,759,041
483 3,759,042

CLASS 61
4 3,759,043
35 3,759,044
46 3,759,045
46.5 3,759,046

CLASS 62
66 3,759,047
73 3,759,048
80 3,759,049
93 3,759,050
115 3,759,052
157 3,759,053
160 3,759,055
180 3,759,051
183 3,759,054
3,759,056
196 3,759,057
228 3,759,058
246 3,759,059
294 3,759,060
352 3,759,061
474 3,759,062

CLASS 64
11R 3,759,063
13 3,759,064
23 3,759,065
27S 3,759,066
31 3,759,067

CLASS 65
6 3,759,680
12 3,759,681
109 3,759,682
134 3,759,683
145 3,759,684
156 3,759,685
167 3,759,686

CLASS 66
1 3,759,068
50B 3,759,069
189 3,759,070

CLASS 68
18C 3,759,071

CLASS 70
59 3,759,072
68 3,759,073
143 3,759,074
159 3,759,075
232 3,759,076

CLASS 71
28 3,759,687
71 3,759,688
76 3,759,689
93 3,759,690

CLASS 72
99 3,759,077
238 3,759,078
330 3,759,079
356 3,759,080
364 3,759,081

CLASS 73
1B 3,759,082
1F 3,759,083
12 3,759,085
19 3,759,086
23 3,759,087
37 3,759,088
64.1 3,759,089
67.6 3,759,090
116 3,759,091
141A 3,759,093
141R 3,759,092
143 3,759,094
157 3,759,095
194EM 3,759,097
194B 3,759,096
205R 3,759,098
207 3,759,099
230 3,759,100
291 3,759,101
355R 3,759,102
358 3,759,103
362R 3,759,104
421A 3,759,105
421.5R 3,759,106
422GC 3,759,107
432R 3,759,109
432 3,759,108

CLASS 74
99 3,759,110
230.17E 3,759,111
231 3,759,112
424.8 3,759,113
489 3,759,114
512 3,759,115
606R 3,759,116
681 3,759,117

CLASS 75
.5BA 3,759,691
3,759,692
3 3,759,693
5 3,759,694
10 3,759,695
11 3,759,696
26 3,759,697
42 3,759,698
43 3,759,699
60 3,759,700
61 3,759,701
63 3,759,702
66 3,759,703
122 3,759,704
124 3,759,705
3,759,706
171 3,759,707
208R 3,759,708
211 3,759,709

CLASS 76
43 3,759,118

CLASS 81
57.39 3,759,119

CLASS 82
14A 3,759,120
20R 3,759,121

CLASS 83
24 3,759,122
54 3,759,123
81 3,759,124
90 3,759,125
112 3,759,126
318 3,759,127
411R 3,759,128
444 3,759,129
637 3,759,130

CLASS 84
1.03 3,760,088
282 3,759,131
383 3,759,132
457 3,759,133

CLASS 89
14D 3,759,134
33BB 3,759,136
33B 3,759,135
35R 3,759,137
37R 3,759,138

CLASS 90
11A 3,759,139
24B 3,759,140

CLASS 91
20 3,759,141
396 3,759,142
414 3,759,143
436 3,759,144
459 3,759,145
475 3,758,899

CLASS 92
13.6 3,759,146
19 3,759,147
160 3,759,148

CLASS 95
4.5 3,759,149
10C 3,759,150
11R 3,759,153
11 3,759,151
3,759,152
11.5R 3,759,154
12.2 3,759,155
31AC 3,759,156

CLASS 96
22 3,759,710
36 3,759,711
50R 3,759,712
126 3,759,713

CLASS 98
33 3,759,158
37 3,759,157
40C 3,759,159

CLASS 99
14 3,759,714
18 3,759,716
92 3,759,717
154 3,759,719
171H 3,759,720
3,759,721
174 3,759,722
208 3,759,723
233.5 3,759,160
282 3,759,161
289 3,759,162
336 3,759,163
413 3,759,164
427 3,759,165
472 3,759,166
485 3,759,167
545 3,759,168

CLASS 100
29 3,759,169
42 3,759,170
100 3,759,171

CLASS 101
9 3,759,172
66 3,759,173
93C 3,759,174
148 3,759,175
170 3,759,176
232 3,759,177
349 3,759,178
368 3,759,179
405 3,759,180

CLASS 102
8 3,759,181
23 3,759,182
28R 3,759,183
38 3,759,184

CLASS 104
112 3,759,185
120 3,759,186
130 3,759,187
168 3,759,188
172S 3,759,189

CLASS 105
150 3,759,190

CLASS 106
38.22 3,759,724
44 3,759,725
45 3,759,726
49 3,759,727
59 3,759,728
90 3,759,729
103 3,759,730
288Q 3,759,731
300 3,759,732
309 3,759,733

CLASS 108
42 3,759,191
44 3,759,192
51 3,759,193
58 3,759,194

CLASS 109
9 3,759,195

CLASS 110
8R 3,759,196

CLASS 111
1 3,759,197

CLASS 112
63 3,759,198
121.12 3,759,199
121.15 3,759,200
121.27 3,759,201
239 3,759,202

CLASS 113
1G 3,759,203
114BE 3,759,204
120H 3,759,205
121C 3,759,206

CLASS 114
65R 3,759,207
73 3,759,208
74 3,759,209
105 3,759,210
148 3,759,211
208 3,759,212

CLASS 115
16 3,759,213

CLASS 116
63P 3,759,214
76 3,759,215
124B 3,759,216

CLASS 117
4 3,759,734
33.5C 3,759,735
33.5T 3,759,736
54 3,759,737
93.31 3,759,738
105.2 3,759,739
126GS 3,759,740
136 3,759,741
161KP 3,759,742
211 3,759,743
218 3,759,744
237 3,759,745

CLASS 118
5 3,759,217
18 3,759,218
261 3,759,219
3,759,220
504 3,759,221
637 3,759,222

CLASS 119
5 3,759,223
3,759,224
14.04 3,759,225
14.36 3,759,226
52B 3,759,227

79 3,759,228
97R 3,759,229

CLASS 122

156 3,759,230

CLASS 123

32EA 3,759,231
3,759,232
32G 3,759,239
41.1 3,759,233
136 3,759,234
139DP 3,759,235
140R 3,759,236
148E 3,759,237
192B 3,759,238

CLASS 126

19R 3,759,240
21A 3,759,241
25 3,759,242
110R 3,759,244
406 3,759,245

CLASS 128

2R 3,759,246
2.05F 3,759,247
2.06A 3,759,248
2.08 3,759,249
57 3,759,250
69 3,759,251
70 3,759,252
75 3,759,255
79 3,759,253
3,759,254
89A 3,759,256
92BC 3,759,257
263 3,759,258
269 3,759,259
283 3,759,260
287 3,759,261
290R 3,759,262
305 3,759,263
334R 3,759,264
419P 3,759,265
3,759,266

CLASS 131

8R 3,759,267
9 3,759,268
123 3,759,269
261B 3,759,270

CLASS 132

33G 3,759,271
92R 3,759,272
3,759,273
3,759,274

CLASS 134

45 3,759,275
57DL 3,759,276

CLASS 135

4R 3,759,277
46M 3,759,278

CLASS 136

24 3,759,746
36 3,759,747
86A 3,759,748
175 3,759,749

CLASS 137

1 3,759,279
68 3,759,281
3,759,282
106 3,759,283
268 3,759,284
363 3,759,280
3,759,285
392 3,759,286
493.9 3,759,287
498 3,759,288
525 3,759,289
565 3,759,290
588 3,759,291
596 3,759,292
598 3,759,293
612.1 3,759,294
625.47 3,759,295
805 3,759,296

CLASS 138

156 3,759,297

CLASS 139

82 3,759,298
97 3,759,299
122R 3,759,300
281 3,759,301

CLASS 140

119 3,759,302

CLASS 141

1 3,759,303

CLASS 144

3R Re.27,760
180 3,759,304

CLASS 148

2 3,759,750
3 3,759,752
6.16 3,759,754
6.2 3,759,751
6.3 3,759,753
11.5R 3,759,755
22 3,759,756
38 3,759,757
159 3,759,758
171 3,759,759
175 3,759,760
187 3,759,761
3,759,762
188 3,759,763

CLASS 149

19 3,759,764
19.91 3,759,765

CLASS 150

39 3,759,305

CLASS 152

374 3,759,306
396 3,759,307

CLASS 156

14 3,759,766
17 3,759,767
3,759,768
61 3,759,769
73 3,759,770
78 3,759,775
109 3,759,771
270 3,759,772
273 Re.27,759
280 3,759,773
284 3,759,774
309 3,759,776
330 3,759,777
331 3,759,778
3,759,779
335 3,759,780
521 3,759,781

CLASS 159

13R 3,759,308

CLASS 161

57 3,759,782

CLASS 162

40 3,759,783
87 3,759,784
142 3,759,785

CLASS 164

4 3,759,309
52 3,759,310
3,759,311
64 3,759,312
87 3,759,313
3,759,314
120 3,759,315
177F 3,760,053
405 3,759,316

CLASS 165

19 3,759,317
108 3,759,318
111 3,759,319
122 3,759,320
125 3,759,321
166 3,759,322
3,759,323

CLASS 166

75 3,759,324
273 3,759,325
275 3,759,326
295 3,759,327
303 3,759,328
308 3,759,329

CLASS 169

2R 3,759,330
17 3,759,331

CLASS 172

239 3,759,332
781 3,759,333

CLASS 173

22 3,759,334
91 3,759,335
163 3,759,336

CLASS 174

12BH 3,760,089
52S 3,760,090
68.5 3,760,091
126CS 3,760,092
128 3,760,093

CLASS 176

15BA 3,760,106
68 3,759,243
69 3,759,786
169 3,759,787

CLASS 177

100.2E 3,760,123
172 3,759,337
173 3,759,338

CLASS 178

5.1 3,760,097
5.4ES 3,760,096
5.4SD 3,760,094
5.4SY 3,760,095
5.4R 3,760,099
6.6B 3,760,098

CLASS 179

1SA 3,760,108
1R 3,760,100
3,760,102
6.3R 3,760,101
3,760,104
8A 3,760,105
3,760,110
15AQ 3,760,103
15BA 3,760,109
15BF 3,760,107
16E 3,760,111
17A 3,760,112
18EB 3,760,114
18FG 3,760,113
18GE 3,760,117
3,760,119
18GF 3,760,115
18HA 3,760,118
18J 3,760,116
19 3,760,120
90K 3,760,121
99 3,760,122
100.2Z 3,760,124
100.41B 3,760,126
100.41K 3,760,125
175.31R 3,760,127

CLASS 180

27 3,759,339
53FE 3,759,340
64R 3,759,341
70R 3,759,342
91 3,759,343
105E 3,759,344

CLASS 181

31B 3,759,345

CLASS 182

7 3,759,346

CLASS 184

6R 3,759,347
6.23 3,759,348

CLASS 187

2 3,759,349
29R 3,759,350

CLASS 188

1C 3,759,351
24 3,759,352
71.5 3,759,353
218XL 3,759,354
290 3,759,355

CLASS 190

42 3,759,356

CLASS 191

49 3,760,128

CLASS 192

3R 3,759,357
8C 3,759,358

CLASS 195

1.8 3,759,788
28R 3,759,789
29 3,759,790
51G 3,759,791
70 3,759,792
103.5R 3,759,793
3,759,794

CLASS 197

1R 3,759,359
17 3,759,360
65 3,759,361
82 3,759,362
84R 3,759,363

CLASS 198

20 3,759,364
33AD 3,759,365
3,759,366
41 3,759,367
76 3,759,368
140 3,759,369

CLASS 200

38R 3,760,129
42R 3,760,130
43 3,760,131
50A 3,760,132
50B 3,760,133
52R 3,760,134
61.13 3,760,136
61.58B 3,760,135
166C 3,760,137
835A 3,760,138

CLASS 201

25 3,759,795

CLASS 204

12 3,759,796
14N 3,759,797
15 3,759,798
16 3,759,799
3,759,800
35N 3,759,801
41 3,759,802
49 3,759,803
93 3,759,804
130 3,759,805
159.23 3,759,807
3,759,808
3,759,809
181 3,759,810
193 3,759,811
250 3,759,812
256 3,759,813
268 3,759,815
275 3,759,814
299 3,759,816

CLASS 206

16.5 3,759,370
42 3,759,371
57R 3,759,372
63.2R 3,759,375
63.3 3,759,376
65C 3,759,373
3,759,378
65R 3,759,374
3,759,377
84 3,759,379

CLASS 208

14 3,759,817
25 3,759,818
57 3,759,819
64 3,759,820
93 3,759,821
131 3,759,822
138 3,759,823
139 3,759,824
191 3,759,825

CLASS 209

22 3,759,380
73 3,759,381
80.5 Re.27,762
111.5 3,759,383
111.7 3,759,382
122 3,759,384
165 3,759,385
167 3,759,386

CLASS 210

98 3,759,387
167 3,759,388
169 3,759,389
242 3,759,390
415 3,759,392
491 3,759,393
494 3,759,391

CLASS 211

23 3,759,394
40 3,759,395
46 3,759,398
47 3,759,396
50 3,759,397

CLASS 212

55 Re.27,763
3,759,399

CLASS 214

1QG 3,759,401
6H 3,759,402
16.4A 3,759,403
37 3,759,404
38D 3,759,405
83.3 3,759,406
86A 3,759,407
302 3,759,408
394 3,759,409

CLASS 215

1C 3,759,410
9 3,759,411

CLASS 219

10.65 3,760,139
73 3,760,140
77 3,760,141
85 3,760,142
98 3,760,143
121EB 3,760,144
121P 3,760,145
146 3,760,146
217 3,760,147
222 3,760,148
247 3,760,149
265 3,760,150
383 3,760,151
3,760,152
384 3,760,153
388 3,760,154
399 3,760,155
447 3,760,156
522 3,760,157

CLASS 220

7 3,759,412
16 3,759,413
44R 3,759,414
60 3,759,415
97F 3,759,416

CLASS 221

85 3,759,417
157 3,759,418
168 3,759,419
288 3,759,420

CLASS 222

99 3,759,421
129.4 3,759,422
153 3,759,423
309 3,759,424
3,759,425
385 3,759,426
402.21 3,759,431
402.23 3,759,427
480 3,759,428
546 3,759,429

CLASS 224

45T 3,759,430

CLASS 225

3.4 3,759,828

CLASS 226

42 3,759,432
54 3,759,433
91 3,759,434

CLASS 227

67 3,759,435

CLASS 228

57 3,759,436

CLASS 229

1.5B 3,759,437
65 3,759,438
66 3,759,439

CLASS 231

22 3,759,400

CLASS 232

57.5 3,759,440
3,759,441

CLASS 234

1 3,759,442

CLASS 235

61.11C 3,760,163
61.11E 3,760,161
3,760,162
61.12N 3,760,164
61.4R 3,760,158
61.6R 3,760,159
61.7R 3,760,160
89R 3,760,165
92PK 3,760,166
151 3,760,167
151.012 3,760,168
151.1 3,760,169
151.11 3,760,170
156 3,760,171
181 3,760,172
184 3,760,173

CLASS 239

127.1 3,759,443
138 3,759,444
201 3,759,445
265.35 3,759,446
3,759,447
416.2 3,759,449
419.5 3,759,448
427 3,759,450

CLASS 240

1EL 3,760,175
1R 3,760,174
7.1R 3,759,084
10.1 3,760,176
81BS 3,760,177
106R 3,760,178
3,760,179

CLASS 241

77 3,759,451
82 3,759,452
207 3,759,453

CLASS 242

7.06 3,759,454
47.12 3,759,455
57.1 3,759,456
3,759,457
67.1R 3,759,458
72.1 3,759,459
118.1 3,759,460
118.11 3,759,461
186 3,759,462
3,759,463
188 3,759,464
199 3,759,465

CLASS 244

3.21 3,759,466
53R 3,759,467
102R 3,759,468
149 3,759,469

CLASS 248

2 3,759,470
119R 3,759,471
201 3,759,472
205R 3,759,473
238 3,759,474
277 3,759,475
361R 3,759,476
449 3,759,482
459 3,759,477

CLASS 249

93 3,759,478
95 3,759,479
142 3,759,480
189 3,759,481

CLASS 250

219S 3,760,184
226 3,760,185
252 3,760,183
305 3,760,180
3,760,186
332 3,760,181
349 3,760,187
492 3,760,182
557 3,760,188

CLASS 251

5 3,759,483
67 3,759,484
130 3,759,485
330 3,759,486

CLASS 252

29 3,759,827
32.7E 3,759,862
47.5 3,759,829
51.5A 3,759,830
52R 3,759,831
62.63 3,759,832
95 3,759,833
110 3,759,834
301.4R 3,759,835
309 3,759,836
373 3,759,837
429R 3,759,838
431C 3,759,839
432 3,759,840
441 3,759,841
447 3,759,842
459 3,759,843
465 3,759,844
466J 3,759,845
527 3,759,846
544 3,759,847

CLASS 254

8R 3,759,488
173R 3,759,489

CLASS 256

10 3,759,490

CLASS 259

4 3,759,491
169 3,759,492

CLASS 260

2.5F 3,759,848
8 3,759,849
17.4ST 3,759,850
17.4 3,759,851
18EP 3,759,852
21 3,759,853
3,759,854
22R 3,759,855
23XA 3,759,856
29.6TA 3,759,858
29.6H 3,759,857
29.7SQ 3,759,860
29.7T 3,759,859
31C 3,759,826
31.4R 3,759,861
33.4P 3,759,913
33.6AQ 3,759,863
33.6EP 3,759,864
33.8R 3,759,865
37EP 3,759,866
3,759,914
41R 3,759,915
41.5R 3,759,868
3,759,869
47EC 3,759,871
3,759,872
47C 3,759,870
75NK 3,759,873
76 3,759,875
77.5AP 3,759,874
77.5NC 3,759,916
78A 3,759,877
78L 3,759,876
78.4E 3,759,878
78.5CL 3,759,879
79.5PR 3,759,917
80.3R 3,759,880
80.7 3,759,918
83.7 3,759,919
84.1 3,759,882
86.1E 3,759,881
87.5A 3,759,883
88.2R 3,759,884
92.3 3,759,886
92.8R 3,759,885
94.9C 3,759,889
94.9H 3,759,888
94.9R 3,759,887
112R 3,759,890
112.5 3,759,891
145C 3,759,892
149 3,759,893

158 3,759,894
3,759,895
209R 3,759,896
239BD 3,759,897
239.1 3,759,898
239.55D 3,759,899
240B 3,759,900
240G 3,759,901
240.8 3,759,902
243C 3,759,904
3,759,905
243R 3,759,903
247 3,759,906
247.2A 3,759,909
248AS 3,759,907
249.5 3,759,910
249.6 3,759,911
250R 3,759,912
251QB 3,759,920
251A 3,759,908
256.4F 3,759,922
283S 3,759,923
286R 3,759,924
293.5S 3,759,925
293.5R 3,759,927
293.72 3,759,928
293.8B 3,759,929
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DESIGN PATENTS

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228,382	228,396	228,400	228,420	228,403	228,422
228,395	17 : 228,376	228,406	228,421	29 : 228,411	39 : 228,414
228,401	228,377	228,408	228,423	32 : 228,418	40 : 228,391
228,405	228,379	228,413	228,424	34 : 228,412	44 : 228,374
8 : 228,373	228,380	19 : 228,375	228,425	36 : 228,398	228,394
9 : 228,388	228,381	24 : 228,417	27 : 228,372	228,402	53 : 228,392
228,415	228,393	25 : 228,383			

PLANT PATENTS

12 : 3,396	3,398	3,399	17 : 3,395	18 : 3,402	34 : 3,400
12 : 3,397					

U. S. GOVERNMENT PRINTING OFFICE : O - 1973

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary